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ABSTRACT

A survey was conducted in 42 developing countries and in 20 developed countries to determine fertility practices and trends. Both individual and household questionnaires were used by interviewers to gather data. Findings concerning marriage patterns, contraception, reproductive motivation, childspacing, breastfeeding, maternal and child health, and infant and child mortality are discussed. Also examined are policy implications regarding fertility decline and development, family planning, marriage postponement, promotion of breastfeeding, health services, and the use of World Fertility Survey data by policy-makers. Main findings from the developing country surveys include the following: fertility is highest in the Middle East and sub-Saharan Africa, with an average of seven children per woman; there are substantial fertility declines in all regions except sub-Saharan Africa; no single aspect of development that is crucial for bringing about fertility decline has been identified; contraceptive use increases with education; and the presence of convenient family planning services generally leads to greater contraceptive use. (RM)

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WORLD FERTILITY SURVEY

Major Findings and Implications

SP 016 394

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The World Fertility Survey (WFS) is an international research programme whose purpose is to assess the current state of human fertility throughout the world. This is being done principally through promoting and supporting nationally representative, internationally comparable, and scientifically designed and conducted sample surveys of fertility behaviour in as many countries as possible.

The WFS is being undertaken, with the collaboration of the United Nations, by the International Statistical Institute in co-operation with the International Union for the Scientific Study of Population. Financial support is provided principally by the United Nations Fund for Population Activities and the United States Agency for International Development. Substantial support is also provided by the UK Overseas Development Administration.

For information on Country Reports, WFS publications, and WFS depository libraries, write to the Publications Office, International Statistical Institute, 428 Prinses Beatrixlaan, PO Box 950, 2270 AZ Voorburg, Netherlands. For information on the WFS generally, write to the Information Office, World Fertility Survey, International Statistical Institute, 35-37 Grosvenor Gardens, London SW1W 0BS, UK.

L'Enquête Mondiale sur la Fecondite (EMF) est un programme international de recherche dont le but est d'évaluer l'état actuel de la fécondité humaine dans le monde. Afin d'atteindre cet objectif, des enquêtes par sondage sur la fécondité sont mises en oeuvre et financées dans le plus grand nombre de pays possible. Ces études, élaborées et réalisées de façon scientifique, fournissent des données représentatives au niveau national et comparables au niveau international.

L'EMF est entreprise, en collaboration avec les Nations Unies, par l'Institut International de Statistique, qui coopère avec l'Union internationale pour l'étude scientifique de la population. Le financement de ce programme est essentiellement assuré par le Fonds des Nations Unies pour les activités en matière de population et par l'Agence des Etats-Unis pour le developpement international. Une contribution importante est aussi faite par le Département pour le developpement des pays d'outre-mer du Royaume-Uni.

Pour toute information concernant les rapports d'enquêtes nationaux, les publications de l'EMF ou les bibliothèques dépositaires, écrire au Bureau des publications, Institut International de Statistique, 428 Prinses Beatrixlaan, BP 950, 2270 AZ Voorburg, Pays-Bas. Pour tous renseignements complémentaires sur l'EMF en général, écrire au Bureau d'information, Enquête Mondiale sur la Fécondite, Institut International de Statistique, 35-37 Grosvenor Gardens, Londres SW1W 0BS, Royaume-Uni.

La Encuesta Mundial de Fecundidad (EMF) es un programa internacional de investigacion cuyo proposito es determinar el estado actual de la fecundidad humana en el mundo. Para lograr este objetivo, se están promoviendo y financiando encuestas de fecundidad por muestreo en el mayor número posible de paises. Estas encuestas son diseñadas y realizadas cientificamente, nacionalmente representativas y comparables a nivel internacional.

El proyecto está a cargo del Instituto Internacional de Estadistica, contando con la colaboración de las Naciones Unidas y en cooperación con la Unión Internacional para el Estudio Cientifico de la Población. Es financiado principalmente por el Fondo de las Naciones Unidas para Actividades de Población y por la Agencia para el Desarrollo Internacional de los Estados Unidos. La Oficina Británica para el Desarrollo de Paises Extranjeros proporciona tambien un gran apoyo financiero.

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Preface

This report presents the major findings and implications from the World Fertility Survey, on the completion of the project after 12 years of endeavour and on the occasion of the 1984 International Conference on Population in Mexico City.

The World Fertility Survey (WFS) is an international programme of research on human fertility throughout the world, carried out through the promotion and support of nationally representative, internationally comparable and scientifically designed and conducted sample surveys in 42 developing countries and 20 developed countries. It was initiated in 1972 largely in response to the announcement of the World Population Year 1974 and the United Nations' call for concerted world action on population matters. The project drew renewed support from the Plan of Action adopted by the World Population Conference at Bucharest in 1974, which invited countries to participate in the WFS programme. It is appropriate that this final report is presented at the successor conference ten years later.

The WFS was established against a background of a lack of adequate information, especially in developing countries, on human fertility and the factors which influence it. Such data are required for the formulation, implementation and monitoring of policies affecting and affected by population trends. We hope that some of the main findings as presented in this report show that the WFS has made a significant contribution to meeting this shortfall, and that the programme has bequeathed to countries a legacy of enhanced capability to investigate these matters in the future.

The report is presented in a non-technical way, to ensure the widest possible dissemination of the information it contains. It draws upon a number of sources, mainly WFS's own publications, but also from publications such as the Population Reference Bureau's population bulletin *The World Fertility Survey: Charting Global Childbearing*. The papers and discussion at the WFS Symposium, held in London in April 1984 to review the results of an overall assessment of the various aspects of the WFS programme, have been another valuable input. We acknowledge the contribution of Mrs Lynn Landman as a consultant in the preparation of this document.

We would like to take this opportunity to thank all those – too numerous to mention individually – who have contributed to the success of the WFS programme in one way or another. Our grateful appreciation goes to the providers of financial support, principally the United Nations Fund for Population Activities and the United States Agency for International Development, with a substantial contribution from the UK Overseas

Development Administration and contributions from a number of other sources. On this occasion we also acknowledge with appreciation a grant received from the Simon Population Trust of the United Kingdom, making the publication of this report possible.

HALVOR GILLE
Project Director

June 1984

1 The WFS: origins and achievements

ORIGINS

In 42 developing and 20 developed countries covering about 1.7 billion people, over 330 000 women in the reproductive age range were interviewed during the period 1974–82. As a result, today's policy-makers, international agencies and researchers have access to a blueprint that charts, with a reliability not hitherto achieved, the detailed features of the fertility of each of the nations. The new data cover fertility levels and trends and aspirations of women as to the size of their families and they make it possible to trace the way in which individual characteristics like educational level, urban–rural residence and employment status act to affect fertility through such mechanisms as changing age at marriage, breastfeeding habits and contraceptive practices.

These national fertility surveys are a product of one of the boldest and largest social survey undertakings in history, the World Fertility Survey. Just a decade ago, following two years of preparation, the first survey was fielded. In the intervening years, developing nations in virtually every region of the world agreed to take part in the WFS. As regards developed countries, nearly all European countries participated in addition to the United States (see table on page 6).

The WFS was commissioned at a time of growing concern among governments and international agencies over the accelerated rates of growth of human populations and their social and economic consequences. Official attitudes to family planning programmes varied widely among countries and there was a view in some quarters that economic development would of itself bring down birth rates as it had done long before in many of the industrialized countries. In the absence of reliable data on these issues, the International Statistical Institute (ISI) together with the United States Agency for International Development (USAID) and the United Nations Fund for Population Activities (UNFPA) took the bold initiative of setting up in 1972 this ambitious programme of fertility research. The proposal quickly received support from the countries. Equally enthusiastic were the professional demographers and statisticians working in the area of developing country problems. Constantly frustrated as they were by the need to rely on *ad hoc*, unsystematized studies done at the whim of individual investigators and lacking in comparability, they saw research opportunities for years to come from such a co-ordinated body of work which held out the prospect of a large volume of well-documented, easily accessible and good quality data covering most of the countries of the world. So the WFS was born in an atmosphere of enthusiasm and widespread support.

The programme was funded mainly by UNFPA and USAID with additional support from the governments of the United Kingdom, France, Canada and Japan. The executing agency, the ISI, was a non-profit organization with a longstanding reputation for its work in support of international co-operation in the field of statistics. It was agreed that the ISI should work in close collaboration with the International Union for the Scientific Study of Population, the recognized world body of demographers.

The objectives of the WFS were:

- To assist developing countries to obtain the data they needed to describe the fertility status of their population;
- To collect internationally comparable data;
- To promote the development of national competence in survey design, execution and interpretation.

These aims were summed up as 'promoting and supporting nationally representative, internationally comparable, and scientifically designed and conducted sample surveys of fertility behaviour' in order to assess the current state of human fertility throughout the world. Although not explicitly stated, it was recognized that WFS surveys were to have the further objective of being useful to policy-makers. This aspect received greater emphasis as time went on.

The leader selected, Sir Maurice Kendall, was chosen for his worldwide stature in statistical scholarship and for his reputation as a firm manager and diplomatic negotiator. The quality and achievements of the World Fertility Survey stand as a monument to Kendall who led the organization from its challenging beginnings until 1980 when ill health compelled him to resign.

The WFS ultimately covered 42 developing countries. One country, Iran, has not completed the analysis of data collected. For the list of countries, with dates of fieldwork and sample sizes, see the table on p6.

The 20 developed countries participating in the WFS carried out national fertility surveys following the version of the core questionnaire adapted to low fertility situations. They did not receive financial or technical assistance from WFS, while the comparative analysis was carried out by the Population Team in the Economic Commission for Europe. The remainder of this report is based mainly on the results from, and experience with, the WFS operations in the 41 developing countries.

CONTENT OF THE SURVEY

At the time WFS was established, few developing countries had experience with national fertility surveys. Only five such surveys had been carried out in developing countries and 13 in industrialized nations. To organize comparable and relevant surveys across a broad range of cultures was a challenging task. The original drafts of the two basic survey documents, a core questionnaire for individual women and a household survey schedule,

that were ultimately used under the WFS project, drew on the work of an earlier IUSSP Committee on Comparative Studies of Fertility and Fertility Planning. The drafts went through eight revisions over an 18-month period, following suggestions made by around 200 researchers world wide to whom they had been submitted for comment. Later the core questionnaire was translated during the course of the project into more than a hundred different languages for use in the participating countries. Exceptional efforts were made to produce questionnaires that would prove both relevant and fruitful in a great variety of cultural settings.

The standard WFS household schedule contains eight main questions asking the name, sex, age, relationship and residence of all members of a household, two questions on the marital status of all adults, and eleven on the fertility of all adult women. Provision was made for optional questions on housing conditions, and the presence or absence of such indicators of modernity as electricity, radios, running water, and toilet facilities. The household survey permitted identification of the women of childbearing age, in general defined as 15–49. Selected women from this group were asked to respond to the individual questionnaire. In many countries an added qualification for the individual interview was that the woman should be currently or formerly married.

The individual questionnaire contains a total of 112 questions on the background of the women; complete marital and maternity histories, the latter including a chronological listing of all pregnancies and their outcomes, as well as breastfeeding practice and duration of the two most recent births; knowledge and use of specific contraceptive methods; fertility regulation (including number of additional children wanted and the total number desired); and the work history and other socio-economic characteristics of the woman and her husband.

An average woman with a total of four pregnancies, one marriage, some contraceptive knowledge and work experience would be required to respond to some 80 questions in an interview lasting about 30 minutes. This core questionnaire was essentially mandatory for all developing countries although many detailed adaptations were made to meet local requirements. In addition many countries added questions of specific national interest.

It was early recognized that participating countries might want substantial additional information to meet their own special circumstances and needs. In an effort to ensure inter-country comparability even for such non-core material, seven modules were designed to supplement the core questionnaire. Although their use was optional, in some cases strong recommendations were made by the WFS for their adoption. The optional modules were Family planning; Fertility regulation; Factors other than contraception affecting fertility; Abortion; Economic factors; Community variables; and Mortality.

During the period when the survey questionnaires were being developed and field tested, other crucial decisions and activities were under way. Conferences were held in various parts of the developing world to describe the undertaking to key country personnel in order to encourage country recruitment; a variety of manuals were created to guide survey and analysis activities in the participating countries; a decision was made that no matter what the obstacles, all surveys were to result in the publication of a country report to be written and produced within each country, if possible following a carefully designed content and presentation.

One reason for this last requirement was the lamentable worldwide history of surveys taken and never completed; or if completed, never published, with the data left to gather dust somewhere, of no use to anyone. A publication programme was decided upon to demonstrate how the surveys could be mined to yield useful in-country and cross-country information. Heavy emphasis was placed on the necessity for nationals from developing countries to do as much of the survey work and analysis as possible so that technological capabilities would be enhanced.

An important decision was that women should be used to undertake the actual surveying in the field. In many parts of the developing world, interviewing for surveys had always been regarded as a man's task. It was argued that women would have neither the standing nor the authority to elicit the necessary co-operation from those to be surveyed. And there was even doubt about whether women would have the stamina to spend weeks in the field, often under trying circumstances. However the highly sensitive information being sought from women on their reproductive lives clearly required the use of female interviewers in most cultures. In all but three countries this recommendation was accepted, and the vast majority of the interviewers trained in the participating countries were women. A token of their success is the extraordinarily high response rates to the individual and household surveys – well over 90 per cent in most countries.

ACHIEVEMENTS

How well has the WFS met the objectives it set for itself a decade ago? It will be recalled that one of the primary objectives was to assist developing countries to obtain data needed to describe and explain their fertility. From the evidence at hand, this objective has been and continues to be met. While there may be disagreement over the validity of some of the data and their interpretation, there is no question that the vacuum that previously existed in the absence of both census information and vital registration has to a considerable extent been filled. National fertility surveys in all 42 countries have been completed and the findings published for 41 of them in the form of first country reports. This virtually 100 per cent completion rate is unprecedented.

Each country report, running from 500 to 1000 pages, contains over 200 tables and accompanying text following meticulous WFS-designed guidelines for both. The reports have been criticized on several grounds: they were not published quickly enough (on average, they took twenty months to complete, but in nine countries, four years); they are formidably long and too detailed for practical use; they suffer from an almost obsessive perfectionism, especially as regards the efforts to eliminate all inconsistencies in data collection; there is too little emphasis on policy relevance. None the less they are apparently proving to be a useful resource, according to the testimony from the developing countries. Nor can there be any doubt that these results constitute a fulfilment of the second WFS objective, the collection of internationally comparable data. For the type of information that is obtainable only through surveys, the output of the WFS represents a giant leap in the direction of international comparability.

What about the third objective, that of helping to build up national survey capability?

Part of the answer may be inferred from the following facts:

- All WFS fieldwork was carried out by nationals of each country. Among these were the 2500 interviewers, the overwhelming majority of them women, who received three weeks on-site training to prepare them for carrying out their assignment with understanding and sensitivity. In addition, over 1000 supervisors and field editors were trained.

- At least 100 nationals from 41 countries were trained in data processing techniques under the WFS programme.

- 172 demographers and statisticians from 55 countries (including some from nations not participating in the WFS) attended special analytical workshops, generally lasting three months, where they received intensive training in analytic techniques.

- Of the 42 participating WFS countries, 37 completed all data checking and cleaning in-country, and 21 completed all data processing up to the production of the country report. For the remainder, the work was done either by WFS staff in London or in Santiago, Chile, with the assistance of the Centro Latinoamericano de Demografía.

- WFS produced 12 basic documents, in Arabic, English, French and Spanish, describing survey procedures, as well as 12 illustrative analyses, 11 technical bulletins (listed in the bibliography) and different types of computer software which, together, comprise a set of training documents of lasting value to survey workers in developing countries.

- Standard data tapes for 41 of the participating countries have been produced, providing researchers within, as well as outside, the countries with the tools for carrying out analytic studies. By June 1984, 1322 datasets had been distributed among some 300 institutions world wide, always with the permission of the countries concerned. For, by previous agreement, the individual nations have the final say over the disposition of the materials and it is only with their concurrence that information from national surveys may be released.

- A total of 134 national survey personnel came to WFS headquarters in London for a total duration of over 200 person-months, both to carry out work in connection with their national surveys and to receive training of one kind or another.

Measured in these terms, there is little question that the WFS achieved its objectives. Major responsibility for the execution of the surveys was assumed by national staffs who carried out every phase of the technically challenging operation. No effort was spared to ensure that as much work as possible was completed in the country itself. This policy was maintained even in situations where the cheaper and quicker alternative might have been a direct execution of the task by the WFS headquarters staff. In this way countries obtained rich and lasting experience in carrying out surveys of an extremely high standard.

Table Countries participating in World Fertility Survey

Region and country	Population mid-1983 (estimate, millions)	Year of field-work	Sample size (women)
	Developing countries		
Africa			
Benin	3.8	1981/82	4018
Cameroon	9.1	1978	8219
Ghana	13.9	1979/80	6125
Ivory Coast	8.9	1980/81	5764
Kenya	18.6	1977/78	8100
Lesotho	1.4	1977	3603
Nigeria	84.2	1981/82	9727
Senegal	6.1	1978	3985
Egypt	45.9	1980	8788
Mauritania	1.8	1981	3500
Morocco	22.9	1980	5800
Sudan (North)	20.6	1978/79	3115
Tunisia	6.8	1978	4123
Asia and Pacific			
Iran	42.5	1977	4878
Jordan	3.6	1976	3610
Syria	9.7	1978	4487
Turkey	49.2	1978	4431
Yemen A.R.	5.7	1979	2605
Bangladesh	96.5	1975/76	6504
Nepal	15.8	1976	5940
Pakistan	95.7	1975	4952
Sri Lanka	15.6	1975	6810
Fiji	0.7	1974	4928
Indonesia	155.6	1976	9155
Korea, Rep. of	44.3	1974	5430
Malaysia	15.0	1974	6321
Philippines	52.8	1978	9268
Thailand	50.8	1975	3820
Americas			
Colombia	27.7	1976	5378
Ecuador	8.8	1979/80	6797
Paraguay	3.5	1979	4622
Peru	19.2	1977/78	5640
Venezuela	18.0	1977	4361
Costa Rica	2.4	1976	3935
Dominican Rep.	6.2	1975	3115
Mexico	75.7	1976/77	7310
Panama	2.1	1975/76	3701
Guyana	0.8	1975	4642
Haiti	5.7	1977	3350
Jamaica	2.3	1975/76	3096
Trinidad & Tobago	1.2	1977	4359
Europe			
Portugal	9.9	1979/80	5148

Total population: 1081 million
Total women in samples: 223 460

Table *(continued)*

Region and country	Population mid-1983 (estimate, millions)	Year of field-work	Sample size (women)
	Developed countries		
Belgium	9.9	1975/76	4863
Bulgaria	8.9	1976	6911
Czechoslovakia	15.4	1977	3041
Denmark	5.1	1975	5240
Finland	4.8	1977	5449
France	54.6	1977/78	3018
Great Britain	56.0	1976	6589
Hungary	10.7	1977	4009
Israel	4.1	1973/75	6000
Italy	56.3	1979	5499
Japan	119.2	1974	2860
Netherlands	14.4	1975	4522
Norway	4.1	1977/78	4137
Poland	36.6	1977	9799
Romania	22.7	1978	10141
Spain	38.4	1977	6290
Sweden	8.3	1981	5000
Switzerland	6.5	1980	601
USA	234.2	1976	8611
Yugoslavia	22.8	1976	8115

Total population: 733 million
Total women in samples: 110695

Total population in participating countries: 1814 million
Per cent of 1983 world population (4677 million): 38.8 per cent
Total number of women in samples: 334 155

NOTES
Source of population figures: 1983 *World Population Data Sheet*, of the Population Reference Bureau. Of the large countries, Brazil, India and the People's Republic of China did not participate, the first two on the grounds that they had conducted similar surveys in parts of their countries. China eventually applied to join, but as the deadline for recruitment of countries to the WFS programme had been passed, ISI made other arrangements to support implementation of WFS type of surveys.

2 WFS findings

FERTILITY LEVELS, TRENDS AND DIFFERENTIALS

When WFS was founded, detailed information on fertility in developing countries was very scarce. Some countries did not have even basic data on births collected through vital registration systems, while others had fairly complete vital statistics and census data but lacked the detailed information on fertility that can be compiled from sample surveys.

One of the primary aims of the WFS was to fill these gaps by measuring both past and present fertility. Emphasis was also placed on measurement of the factors that directly affect fertility: marriage, breastfeeding and contraception. However, the socio-economic and cultural factors which influence both the demographic characteristics and fertility itself were considered less important for this first set of baseline surveys. Nevertheless detailed data evaluations have shown that, despite some problems with data quality, the collection of complete birth histories proved extremely useful in most countries, for describing the current level, past trends, and, to a limited extent, differences between socio-economic subgroups.

Current fertility levels

For most of the developing countries which completed WFS surveys, current fertility levels far exceed those required to attain moderate population growth, let alone bring about an eventual end to such growth. In these countries, fertility would have to be sustained at the 'replacement' level of 2.2–2.5 births per woman for up to 60 years before annual births and deaths would come into balance. (The 'replacement-level fertility' depends on current mortality levels, which are higher in developing than in developed countries. In developed countries today, replacement-level fertility is 2.1 births per woman.)

We may compare the level of fertility across countries using a well-known measure, the total fertility rate. This is the number of children a woman would bear in her lifetime, were she to experience, at each period of her life, the currently prevalent rate of child-bearing among women of her age. Total fertility rates for the WFS countries are shown in figure 1.

Among WFS participating countries the level of fertility measured in this way is highest in the Middle East and Africa south of the Sahara: both regions have an average of about

TOTAL FERTILITY RATES

(for the period 0–4 years prior to the survey among all women)

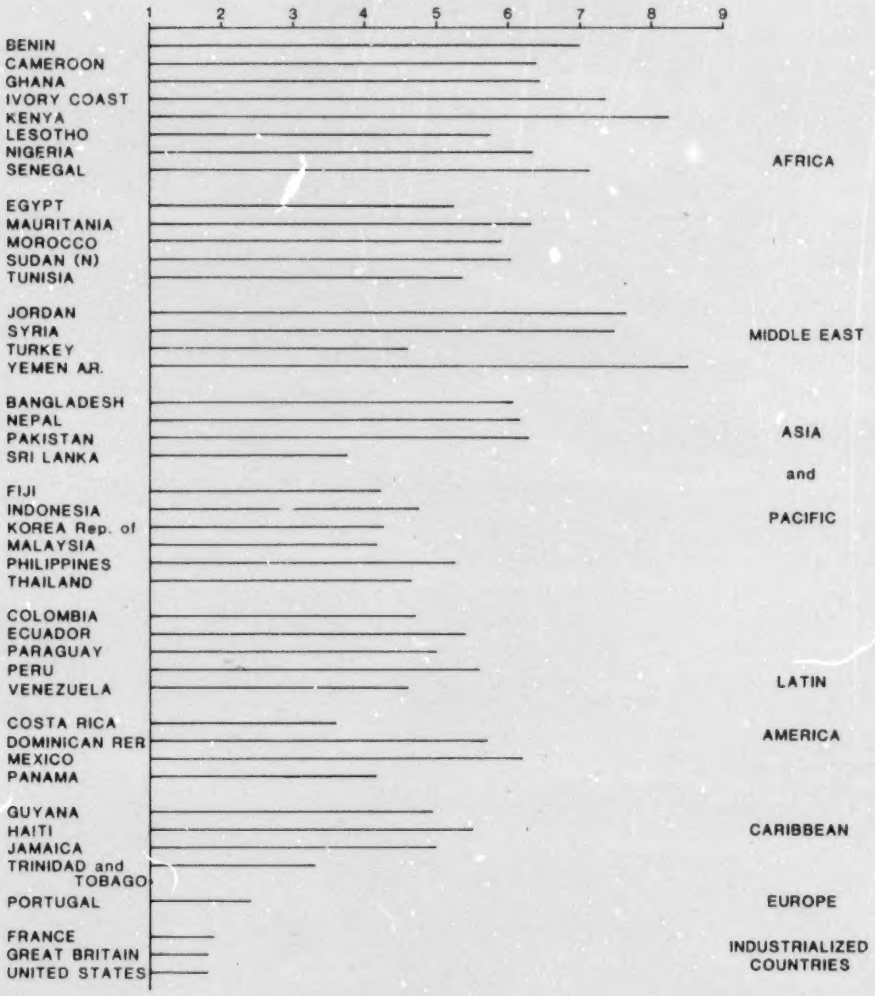

Figure 1

7 children per woman. North Africa (Egypt, Mauritania, Morocco, Sudan and Tunisia) averages only about 6 children. Sub-Saharan Africa shows great variation, however, with Kenya having the highest level of 8.3 children per woman, while three other countries average about 6.5 children (Cameroon, Ghana, Nigeria) and Lesotho has 5.8 children (see figure 1).

Another high fertility group of countries is Bangladesh, Nepal and Pakistan, averaging slightly over 6 children per woman. By contrast, the rest of the Asian and Pacific countries surveyed, and the Latin American/Caribbean region, have definitely begun the transition to low fertility. The average family sizes here are about 4.5 in Asia/Pacific and about 4.8 in the Americas. The latter region shows quite a wide range, however, from under 4.0 children in three small countries (Costa Rica, Panama and Trinidad and Tobago) to around 5 children in several countries, and to a high of 6.2 children in Mexico.

Timing of childbearing

The timing of childbearing, as measured by current fertility rates for women in specific age groups, showed considerable variation among the 41 countries. In countries where women marry young, fertility rates are high for women aged 15–19 – generally 100 or more births per 1000 women of this age. Examples of this are found in several African and Middle Eastern countries, Bangladesh, Indonesia, Nepal, Pakistan, and some countries in the Caribbean Basin. A rate of 100 indicates that one in ten women in this age group give birth each year. The rates are for all women, whether or not they are or have ever been married. A few countries (Fiji, Haiti, Malaysia, Philippines, Sri Lanka and Thailand) – all with a high mean age at marriage – had rates of under 70 for women aged 15–19. At the time of its 1974 survey, the Republic of Korea had the extraordinarily low rate of 11 for women aged 15–19. (In the United States, the 1978 fertility rate for women of this age, whether or not married, was 52.)

Among women aged 40–44 and 45–49, low fertility rates were found in several Asian countries, including those with high overall fertility, such as Bangladesh and Pakistan. There is evidence to suggest that this may be due to a stigma attached to women who continue to have children after their own children have started childbearing: these older women have traditionally controlled their fertility through abstinence.

The age pattern of fertility indicates that, as countries experience declining fertility, reproduction becomes increasingly concentrated in a narrow age range, usually 20–29 years. Countries which show a peak in this age group are: Colombia, Fiji, Korea (Republic of), Malaysia, Panama, Paraguay, Thailand and Turkey, all of which have had large declines in fertility. Exceptions to the 20–29 peak age of childbearing are found among some countries with large fertility declines, usually where the age at marriage is either very delayed or very early. In Philippines and Sri Lanka, where many women marry after age 30, peak fertility is delayed to ages 25–34. A few countries which had substantial fertility declines, but still had a low age at marriage, peaked at ages 20–24; these include Dominican Republic, Guyana, Jamaica and Panama. In contrast, some high fertility countries, such as most of the African and Arab countries, Jordan, Nepal, Pakistan and Syria, have high fertility rates over a wider age range, generally 20–34.

Fertility trends

Changes in fertility can be pinpointed by comparing the lifetime childbearing experience of women aged 45–49 at the time of the survey with current fertility, already defined. Alternatively, one may look at the birth histories of the women interviewed for evidence of changes occurring over time.

The first method shows that about half of all WFS countries, mainly those in the Americas, Asia and North Africa, have had substantial declines. Six other countries in the Americas and Asia had moderate declines (Dominican Republic, Haiti, Indonesia, Jamaica, Jordan, Mexico) of between 0.4 and 1 child. Three countries had declines which are quite small, and which may therefore not indicate any definite trend (Ghana, Sudan and Syria). One country showed almost no change (Senegal), while seven, almost all African (Benin, Ivory Coast, Kenya, Lesotho, Mauritania, Nepal, Nigeria) showed moderate rises in fertility, usually about 0.5 child. Only two countries report large rises in fertility, Cameroon and Yemen A.R.

While it is possible that the fertility increases are an artifact, it is more likely that a combination of real increase, date misreporting and occasionally omission account for the observed rise. Two cases where misreporting probably did occur are Bangladesh and Pakistan. The apparent decline from 6.8 to 5.9 children recorded in Bangladesh appears to reflect both a real, temporary decline resulting from the famines of the early 1970s and misdating of births, which causes current fertility to appear too low. The small decline which apparently occurred in Pakistan has been cast into some doubt following the results of a second survey, which suggests that misreporting of recent birth dates affected both surveys.

Use of the full birth history data shows about half of all WFS countries had clear fertility declines since the late 1950s or early 1960s: these countries are mainly in the Americas (Colombia, Costa Rica, Ecuador, Guyana, Haiti, Panama, Paraguay, Peru, Trinidad and Tobago, Venezuela), North Africa (Egypt, Morocco, Tunisia) and Asia (Fiji, Republic of Korea, Philippines, Sri Lanka, Thailand). Ghana and Indonesia also show consistent, if small, declines but these are more recent, from the late 1960s or early 1970s. A few countries showed continuous rises in fertility (Cameroon, Nepal and Yemen A.R.).

Fertility differentials

The influence of social and economic characteristics on the number of children couples have is an important area of research because of its implications for government policies and programmes. Differences in fertility among socio-economic subgroups have been observed in many countries, even those with high, stable fertility. However, there is much less evidence as to whether these differences represent cause or effect.

Women's education

In general, the average number of children per woman declines as the woman's level of education increases. Differences in fertility according to level of education can be seen

even in countries with little or no fertility decline, although they are greater where substantial decline has occurred. For example, in Colombia, where fertility has declined markedly, women with no education average 7 children, compared to only 2.6 children for the secondary educated (total fertility rates). The difference between the lowest and highest education groups in expected lifetime fertility is largest in the Americas and the Middle East, usually 4–5 children; it is smaller in Africa, the Caribbean and Asia – ranging from 1 to 2 children in most cases.

It is interesting to look across countries at the level of fertility among women with secondary education. In the Americas it is typically 2.5–3.0 children, while in Asia 3–4 children is more typical. In Africa, fertility for such women runs at around 4.5–6.0 children, indicating quite a high level in this region, even for the most educated group.

A reversal in the pattern of declining fertility as education increases was observed in some countries – notably several African countries and Indonesia, Pakistan, and Philippines. In these countries, women in the primary school category had higher fertility than those with no education. The explanation may be that women with a few years of primary schooling are more likely to discontinue traditional practices following a birth (such as breastfeeding and abstinence, which serve to decrease fertility by increasing the interval between births).

These reversals in the effect of education on fertility suggest that small increases in female education may not be sufficient to cause fertility declines. In countries where other socio-economic changes are taking place, improved education may not even be necessary for fertility decline. For example, in Colombia fertility declined among women with no education as well as among those with primary and secondary schooling, although there was a time lag of about ten years before this took effect. Nevertheless, increased education usually results in lower fertility because women who are more educated tend to marry later, be employed outside the home, appreciate the advantages of restricting family size and practise contraception effectively.

Place of residence

The WFS data permit analysis of fertility differences between residents of large urban, other urban and rural areas. These differences were substantial, but not as large as those by education. Differentials were more pronounced and universal in the Americas, and in a few Middle Eastern countries, than in other regions. In addition, in a number of countries the difference between rural and urban groups was larger than that between the smaller and larger cities. For example, in the Americas, the large urban and other urban groups usually differed by 1 child or less, while the difference between the other urban and rural groups was 1.5–2.5 children.

Urban–rural residence makes little difference to fertility in Bangladesh, Indonesia, Mauritania, Pakistan, Sri Lanka and Trinidad and Tobago.

In some countries major urban areas had higher fertility than small urban areas (Haiti, Indonesia, Mauritania, Nigeria and Senegal). This may be due to the breakdown in large urban areas of traditional practices, such as breastfeeding, which have depressed fertility in the past.

Women's employment

Research in developing societies suggests that the relationship between work and fertility is complex. Women who worked in the urban or modern market economy, those in higher status occupations and those working away from home or for non-family employers had lower fertility than their national average. These jobs have in common the fact that they make greater demands on the woman's limited time, while providing higher income or status than other kinds of jobs. It is this combination of conflicting demands and greater rewards that pushes women into controlling their fertility. The opposite situation, where high fertility motivates or requires women to start working, was also found in this group of developing countries, and applied to women in low-status, low-paid jobs. Support for this interpretation comes from the fact that these groups occasionally had higher fertility than women who had never worked.

MARRIAGE PATTERNS

Although in most of the developing countries virtually everyone ultimately marries, there are wide variations in the timing of marriage between the major geographical regions and between the countries within these regions. There are differences by urban–rural residence and across levels of educational achievement. The age at first marriage is undergoing changes and the main trend is towards later marriage.

Age at first marriage for the WFS countries is shown in figure 2.

First marriage generally takes place early in the life of women in most developing countries. The highest proportions of married women aged 15–19 are found in Africa and Asia (particularly in the Muslim societies). Asian and African countries are also much more likely to have nearly all women married (or in consensual unions) by the age of 40 than Latin American and Caribbean countries (except for Jamaica). The highest proportions of women who never marry (whether legally or not) are found in the Caribbean and Latin America. In Colombia, Costa Rica, Ecuador and Portugal over 5 per cent of women do not marry.

The proportion of females married within any age group is higher than the proportion of males, because men tend to marry later. The difference between the mean age at marriage for men and women is smallest in the Americas and largest in Africa.

There is a clear trend towards later marriage in a large majority of countries. Asia is the region of greatest change in age at first marriage between the younger and older age groups. The increases in the mean age at first marriage, over the past five years or so, are one to two years for Asia and for most of the countries of the Middle East and North Africa. In the Americas there is only a modest trend towards later marriage. There are, however, some signs of a downward trend in some countries in sub-Saharan Africa.

In all countries, marriage patterns are related to various socio-economic factors such as residence and education. Women with more education or who were raised in urban areas have a later age at first marriage. In some cases the differences are small, but the consistency of these relationships is striking. Because of these patterns, countries where more

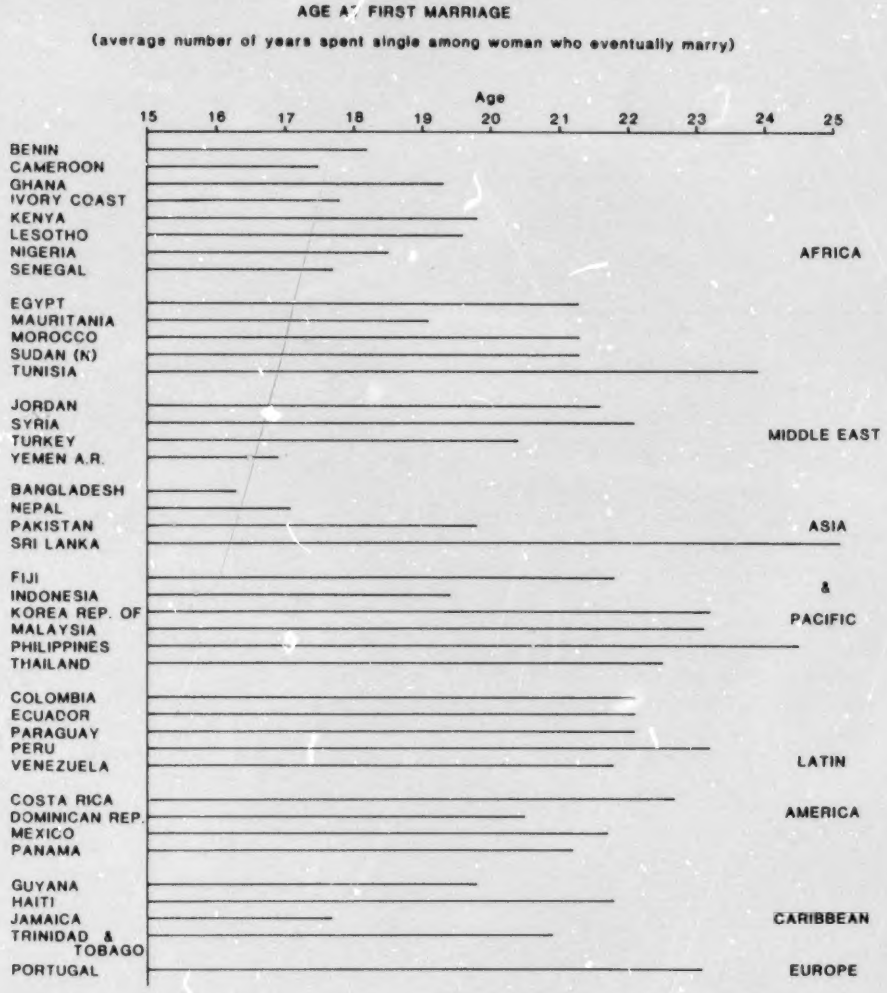
AGE AT FIRST MARRIAGE
(average number of years spent single among woman who eventually marry)
Age
15
16
17
18
19
20
21
22
23
24
25
BENIN
CAMEROON
GHANA
IVORY COAST
KENYA
LESOTHO
NIGERIA
SENEGAL
AFRICA
EGYPT
MAURITANIA
MOROCCO
SUDAN (N)
TUNISIA
JORDAN
SYRIA
TURKEY
YEMEN A.R.
MIDDLE EAST
BANGLADESH
NEPAL
PAKISTAN
SRI LANKA
ASIA
&
PACIFIC
FIJI
INDONESIA
KOREA REP. OF
MALAYSIA
PHILIPPINES
THAILAND
COLOMBIA
ECUADOR
PARAGUAY
PERU
VENEZUELA
LATIN
COSTA RICA
DOMINICAN REP.
MEXICO
PANAMA
AMERICA
GUYANA
HAITI
JAMAICA
TRINIDAD & TOBAGO
CARIBBEAN
PORTUGAL
EUROPE

Figure 2

women are brought up in urban areas or where there are more educational opportunities for women tend to show later ages at marriage.

African women marry early and the rural women are likely to marry earlier than the urban ones. In all regions, larger proportions of rural women than urban women are married, in all age groups. The rate and size of the change in the age at first marriage seem to be very similar in rural and urban areas.

The relationship between education and age at first marriage is persistent in all regions. The Asian and Arab countries show larger differences in age at first marriage according to educational level than the Latin American and Caribbean countries. The most noticeable changes in the age at first marriage begin to occur when women have had seven or more years' education. Education at still higher levels is associated with high age at first marriage.

A large part of the recent change in marriage patterns is, therefore, due to a decline in the number of first marriages made by young and middle teenagers. This trend has altered the age pattern of births in many countries, for it has had the effect of decreasing the exposure to childbearing by reducing the proportion of teenagers who are potential mothers. It is not surprising to find that, as the age at marriage rises overall, fertility at younger ages falls.

Major differences exist in the extent of divorce and separation. The time spent in marital unions for the average woman is less for countries with high dissolution rates than for countries with lower rates, but rarely is the difference more than a year. This is because where dissolution is more frequent remarriage is relatively fast. In most countries the average woman of childbearing age, once married, spends a very large proportion of her time in a marital union. Thus marital dissolution has only a minor depressing effect on the overall level of marital fertility in most developing countries.

These changes may indicate evolving values and aspirations in the developing countries. In any case they entail other changes throughout the demographic, social and economic scene in developing countries, because the numbers of marriages and births in any year has inevitable effects in future years.

CONTRACEPTION

Contraceptive awareness

Since WFS respondents were only asked whether they had 'heard of' various contraceptive methods, the surveys provide, at best, information on contraceptive 'awareness', rather than the extent to which women actually know about use of specific methods. Respondents were asked to recall all the methods for avoiding childbearing they had heard of. After noting these 'spontaneously mentioned' methods, the interviewer read short descriptions of other methods and asked whether the respondent had heard of them. Contraceptive awareness includes both the methods mentioned spontaneously and those recognized from the interviewer's probe.

Ten countries – Benin, Cameroon, Ghana, Lesotho, Mauritania, Nepal, Nigeria, Senegal, Sudan and Yemen A.R. – had large proportions of women (from 32 to 92

per cent) who had not heard of a single contraceptive method. The percentage ranged from 10 to 18 per cent in ten more countries – Bangladesh, Ecuador, Egypt, Haiti, Indonesia, Ivory Coast, Morocco, Peru, Syria and Turkey. In the remaining 21 WFS countries less than 10 per cent said they had heard of no method.

Among respondents who had heard of at least one contraceptive method, the overwhelming majority in all countries (except Benin, Ivory Coast and Senegal) mentioned at least one efficient or modern contraceptive method (ie oral contraceptives, intra-uterine device (IUD), condom, injectables, female or male sterilization, or female barrier methods such as the diaphragm).

Contraceptive use

The data on contraceptive use presented here relate to women currently married under age 49. Across the 41 countries, 26 per cent of such women, or their husbands, were using some form of contraception around the date of interview. Rates of current use are shown for the WFS countries in figure 3.

Among currently married women, contraceptive use ranged from 1 per cent in Mauritania and Yemen A.R. to 64 per cent in Costa Rica. The figure is highest in the Americas, where the average is 39 per cent (weighting each country equally), with proportions of 40 per cent and more in five countries and 19–39 per cent in the other eight. In Asia – with a regional average of 25 per cent – the proportions vary from 41 per cent in Fiji down to 10 per cent or lower in Bangladesh, Nepal and Pakistan. The Middle Eastern countries have moderate proportions of between 24 and 38 per cent while the African countries have generally low proportions of just 2–8 per cent. Morocco and Tunisia occupy a special position in Africa with use reaching 20–30 per cent.

Developed countries typically have much higher levels of contraceptive use. Among the 16 developed countries for which comparable data are available from WFS surveys, contraceptive use was below 60 per cent in only three countries – Romania, Spain and Yugoslavia – and the overall average was 72 per cent. Belgium, Czechoslovakia and Finland had proportions between 80 and 95 per cent, while the figures were between 63 per cent and 78 per cent in the remaining ten countries. These figures are for women still married to their first husbands and under age 45 (rather than age 49).

Contraceptive use patterns also differ substantially by age between developing and developed countries. For example, in the United States at the time of its 1976 survey, 77 per cent of women who were fecund and currently married were using contraception. This was three times the 26 per cent average for the developing countries for which WFS data are available. However, American married women aged 15–19 in 1976 were five times more likely to use contraception than their counterparts in developing countries. By ages 35–39, American married women are only twice as likely to use contraception as women of that age in developing countries.

Contraceptive use in developing countries is comparatively low among women aged less than 30 and rises substantially after that, whereas in the United States, it is relatively even among all married women aged 15–44. There is, in fact, a clear tendency for women in most developing countries to use contraception mainly for stopping childbearing

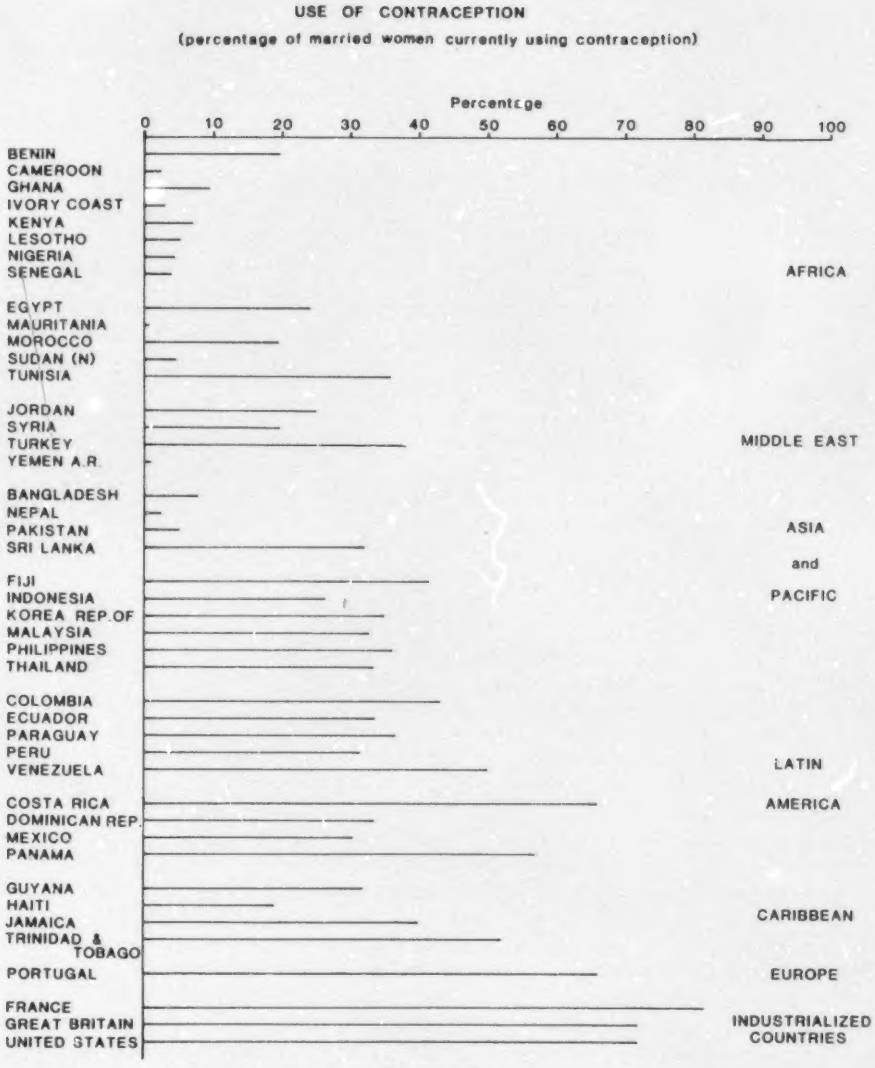
USE OF CONTRACEPTION
(percentage of married women currently using contraception)
Percentage
0
10
20
30
40
50
60
70
80
90
100
BENIN
CAMEROON
GHANA
IVORY COAST
KENYA
LESOTHO
NIGERIA
SENEGAL
AFRICA
EGYPT
MAURITANIA
MOROCCO
SUDAN (N)
TUNISIA
JORDAN
SYRIA
TURKEY
YEMEN A.R.
MIDDLE EAST
BANGLADESH
NEPAL
PAKISTAN
SRI LANKA
ASIA
and
FIJI
INDONESIA
KOREA REP.OF
MALAYSIA
PHILIPPINES
THAILAND
PACIFIC
COLOMBIA
ECUADOR
PARAGUAY
PERU
VENEZUELA
LATIN
COSTA RICA
DOMINICAN REP.
MEXICO
PANAMA
AMERICA
GUYANA
HAITI
JAMAICA
TRINIDAD & TOBAGO
CARIBBEAN
PORTUGAL
EUROPE
FRANCE
GREAT BRITAIN
UNITED STATES
INDUSTRIALIZED COUNTRIES

Figure 3

altogether, rather than for childspacing, while women in developed countries make greater use of contraception to postpone the first birth and to space subsequent births. For more information on the use of contraception for spacing, see the section on childspacing below.

Methods used

Despite widespread awareness of efficient, modern contraceptive methods, 31 per cent of the women using contraception at the time of interview in the 41 developing countries were using inefficient or traditional methods.

The proportion of contraceptors using inefficient methods was highest in the African and Middle Eastern countries (38 and 36 per cent respectively) and lowest in the countries of Asia and the Americas (26 and 24 per cent respectively). The figures exceeded 40 per cent in 11 countries – Benin, Cameroon, Haiti, Ivory Coast, Lesotho, Nigeria, Peru, Philippines, Portugal, Senegal and Turkey. Since inefficient methods are generally more difficult to use, their use seems to indicate a strong commitment to postpone or stop childbearing as well as either lack of access to efficient methods or religious beliefs opposed to the use of such methods.

Giving each of 29 countries equal weight, 73 per cent of all contraceptive use is accounted for by five methods, led by the pill (30 per cent) and female sterilization (13 per cent), with rhythm, the IUD and withdrawal all having 10 per cent each. The remaining 27 per cent of current contraceptive use includes the condom (8 per cent), abstinence (7 per cent), injectables (4 per cent), male sterilization (4 per cent), female barrier methods such as the diaphragm and foam (2 per cent), douche (2 per cent) and folk methods.

The methods used vary widely from country to country. For example, the pill is used by only 5 per cent of all contraceptors in Sri Lanka, compared with 55–67 per cent in Indonesia, Sudan and Syria. Female sterilization accounts for only 1 per cent of contraceptive use in Haiti, Indonesia, Senegal and Turkey, compared with 27–39 per cent in Dominican Republic, Fiji, Guyana and Sri Lanka.

Withdrawal is used by less than 1 per cent of contraceptors in Nepal and Senegal, but by 25–49 per cent of contracepting couples in Haiti, Lesotho, Philippines and Turkey. Abstinence is used by 67 per cent of all users in Senegal and 15–22 per cent in Bangladesh, Haiti, Kenya and Pakistan.

Male sterilization is used by 67 per cent of contraceptors in Nepal and 10 per cent in the Republic of Korea. Condom use assumes major importance in Trinidad and Tobago (29 per cent of all users) and in Fiji, Jamaica, Republic of Korea and Pakistan (15–19 per cent). Use of injectables averages less than 4 per cent across all countries, but injectables are more widely used than the pill in Panama (39 compared with 32 per cent).

Turning to the 16 developed countries that have had recent WFS surveys, striking differences in contraceptive practice were found. Use of efficient contraceptive methods ranges from 9 per cent of all current users in Romania to 96 per cent in Finland. The pill was the most popular method in Belgium, France, Great Britain, Hungary, Netherlands and United States. The IUD ranked first in Norway (39 per cent of all contraceptive use) and was also popular in Finland (36 per cent), where the condom ranked first

(40 per cent), as it did in Denmark (39 per cent). Female and male sterilization for contraceptive purposes was of little importance in these 16 countries at the time of their surveys, with the major exceptions of Great Britain (21 per cent) and the United States (25 per cent). Inefficient methods account for 48 per cent or more of current contraceptive use in Bulgaria, Czechoslovakia, Italy, Poland, Romania, Spain and Yugoslavia. These are mainly withdrawal, except in Poland, where rhythm ranks first (41 per cent of all use), and in Romania, where rhythm (41 per cent) is almost as popular as withdrawal (44 per cent). Induced abortion is still the main method of birth control in Bulgaria and Romania, and remains important in other East European countries, including Hungary, where the pill is now the most popular contraceptive method.

Contraceptive availability and use

A key issue for policy-makers seeking to influence fertility trends is the extent to which contraceptive use is affected by the availability of family planning services. Some answers are now available from data on current contraceptive use and questions asked in 12 WFS surveys about respondents' knowledge of sources of family planning supplies. These questions, however, assessed only *perceived* availability. It is likely that couples who are highly motivated to limit their fertility will seek out family planning services wherever they are, while those who are less motivated will not make such an effort. More objective data on the availability of services in specific areas are needed and were, in fact, collected for some WFS surveys that interviewed local officials, using the community variables module. The one study of such data completed to date, for rural areas in Bangladesh, Republic of Korea and Mexico, found that contraceptive use was higher in communities with better availability of services. This is in line with the general conclusions drawn from women's responses, described in this section.

Among the 12 developing countries for which data are available, knowledge of a family planning 'outlet' ranged as high as 91–92 per cent in Paraguay and Trinidad and Tobago, 86 per cent in the Republic of Korea and was well over 50 per cent in most other countries. Mexico's figure was 49 per cent and Kenya's 42 per cent – a low level compared with the non-African countries but still appreciably higher than Lesotho's 27 per cent.

As one might expect, women who knew a family planning outlet were more likely to be using contraception. Nevertheless, contraceptive use was far from negligible in several countries among women who knew no outlet. Most of these women were using modern contraceptive methods which suggests that those who had obtained contraceptives from private physicians or who had been sterilized in hospital may not have mentioned these as outlets.

In an analysis of WFS data for nine countries, it was found that in eight of these at least half of the women who knew of a family planning outlet lived within 30 minutes' travel time of the outlet. Of course travel time is only one of many factors involved in the decision-making of a prospective family planning user. The mode and cost of transportation, the cost of child care and of contraceptive supplies, and the hours of service and adequacy of supplies at the family planning outlet may also be important considerations.

Travel time does make some difference in contraceptive use: the use level was generally 5–10 per cent higher among women who knew of an outlet less than 30 minutes away than among women who had to travel 30 minutes or more. Some of this difference is due to lower contraceptive use and longer travel time in rural than in urban areas. Within urban areas, longer travel time results in slightly lower contraceptive use in Republic of Korea, Malaysia, Paraguay and Venezuela, while in rural areas the same holds true in Colombia, Malaysia, Mexico, Paraguay and Philippines. The small size of these differences and the fact that they do not occur in all countries support the argument that motivation is generally a stronger determinant of contraceptive use than availability of services.

However, a stronger association emerges when accessibility is related to use of specific methods. Using data from the Philippines, it was found that accessibility was particularly important in relation to methods needing a regular source of supply, such as the pill and the condom, although it was unrelated to use of sterilization and the IUD – methods not needing a regular supply source. Rural women were even more likely to use the pill or the condom than urban women if they lived near a source of supplies, and even IUD use was higher among rural women who knew of a family planning outlet. The association between accessibility and visits to outlets and possession of contraceptives in the home was also notable in rural areas.

The general conclusion to be drawn from these findings is that contraceptive use would increase in developing countries, especially in rural areas, if more convenient family planning services were available.

Contraceptive use and fertility

WFS data for 29 countries indicate that contraceptive use is closely associated with fertility declines in developing countries; countries with higher levels of contraceptive use consistently have lower crude birth rates than those with lower levels. More exactly, a 3 per cent increase in contraceptive use is associated with a one point decline in the crude birth rate. According to this analysis, to lower the birth rate by one point would take a 2.4 per cent increase in contraceptive use if efficient methods are used and a 3.3 per cent increase if inefficient methods are used (after allowing for the effects of breastfeeding and marital status).

Contraceptive use and level of development

Increases in gross national product (GNP) per capita, education and the proportion of people living in cities are all part of the complex of factors known as modernization and are usually positively associated with the level of contraceptive use.

Economic indicators

At a national level, contraceptive use generally rises as GNP per capita increases. However, there is considerable variation among countries at similar income levels. For example, among the countries with a GNP per capita under US$200 in 1978, contraceptive use is

32 per cent in Sri Lanka, in contrast to 8 per cent in Bangladesh and 2 per cent in Nepal. In the $200–399 range, contraceptive use is 10 per cent or lower in five countries – Kenya, Lesotho, Pakistan, Senegal and Sudan – and yet is 19 per cent in Haiti and 26 per cent in Indonesia. Within the next rank ($400–1499), Guyana, Philippines and Thailand have substantially higher levels of contraceptive use than countries with twice the level of GNP per capita. Costa Rica has a high level of contraceptive use (65 per cent) although its 1978 GNP per capita ($1540) was scarcely half the $2900 in Trinidad and Tobago and Venezuela, where contraceptive use was 52 and 50 per cent respectively at the time of their 1977 surveys.

While one can question the use of US $GNP as a measure of real income (it may fail to count non-cash income, reflects exchange rates rather than purchasing power, and does not take income distribution into account), it is clear from the WFS data that some countries have been able to achieve higher levels of contraceptive use than others of similar economic status. This finding calls into question the hypothesis that contraceptive use cannot be expected to spread widely before massive economic development has occurred.

Education

Education, measured by literacy as well as years of schooling, is also closely associated with contraceptive use at the national level. According to an analysis of the WFS data, low literacy appears to be more of a barrier to contraceptive adoption than low GNP per capita. For example, Indonesia, Sri Lanka and Thailand have higher levels of contraceptive use than one might expect from their GNP per capita levels, but the levels are close to what would be predicted by their literacy rates.

The WFS data suggest that widespread contraceptive use is difficult to achieve where literacy levels are low. Except for Haiti, none of the countries where less than 30 per cent of adults are literate have contraceptive use levels higher than 10 per cent. The levels are considerably higher in countries where 50 per cent or more of the people are literate.

Educational attainment is similarly a critical ingredient in the mix of factors contributing to high contraceptive use. Contraceptive use increases dramatically as women's years of schooling rise. For instance, Bangladeshi women who have attended school for seven or more years are nearly five times more likely to be contraceptors than women with no education.

This finding is confirmed by developed countries. Data from 16 developed countries showed that, regardless of the number of living children they had, the more educated women were more likely to use contraception than those with less schooling.

Urbanization

Analysis also shows that, at the national level, contraceptive use increases as urbanization increases. However, the correlation is weaker than for GNP per capita and literacy, and several countries diverge from the general pattern. On average, contraceptive use increased by 1 per cent for every 2 per cent of the population living in urban areas.

When the data for individual respondents are tabulated a more consistent pattern emerges. With a few notable exceptions, such as Indonesia, women who live in urban

areas are much more likely to be contraceptive users than rural women. Much of this difference can be attributed to education and other socio-economic factors, as well as to the wider availability of contraceptives in urban areas.

REPRODUCTIVE MOTIVATION

Desire to restrict fertility

The WFS fertility preference data and evidence from other surveys conducted in the past 30 years seem to indicate that there are hardly any countries where women have an unlimited desire to reproduce. In most African countries and some countries in the Middle East, the desired family size is relatively high (between 5 and 8), but in Asia and Latin America the range is between 2 and 5.

There are two dimensions to the wish to restrict one's own fertility – the desire to stop childbearing and the desire to postpone the next birth. Among the countries participating in the WFS, the percentage of women not wanting additional children ranged between 3 and 54 per cent in the 13 African countries, between 24 and 68 per cent in the 14 Asian countries, and between 33 and 62 per cent in the Americas. While the African continent had some of the highest percentages wanting additional children, it also had particularly high percentages of women uncertain as to whether they wanted another child. In all the countries surveyed, women's desire for additional children diminishes with increasing family size.

A number of WFS and other surveys have asked women who wanted additional children whether they wanted the next birth soon or whether they wanted to postpone the next birth. This has provided evidence of a widespread desire to delay the next birth in most countries, varying between 40 and 60 per cent in African countries, 35 and 70 per cent in Asian countries and 70 and 80 per cent in the Americas. While women who want to postpone were found in most countries to be somewhat less likely to use contraception than those who wanted no additional children, about 30 per cent of all contraceptors in all the 41 countries surveyed by WFS were women who said they wanted additional children.

It has often been assumed that the desire to postpone is transient and represents only a short-run desire to space births. Evidence from a number of countries suggests this is by no means always true and that in some countries large numbers of women wish to postpone the next birth for long periods. This has led to the conjecture that many of the women who say they want additional children may be 'permanent postponers'. The long birth intervals that would follow from this would have far greater impact in reducing fertility than the short spacing intervals of two or three years that have often been assumed.

It might be thought that the desire for at least one child of a particular sex would increase the average number of children born per woman. An important finding, however, in all but a handful of countries, is that the preference for children of a particular sex does not usually affect either fertility or contraception.

While there is now extensive information on the reproductive preferences of wives

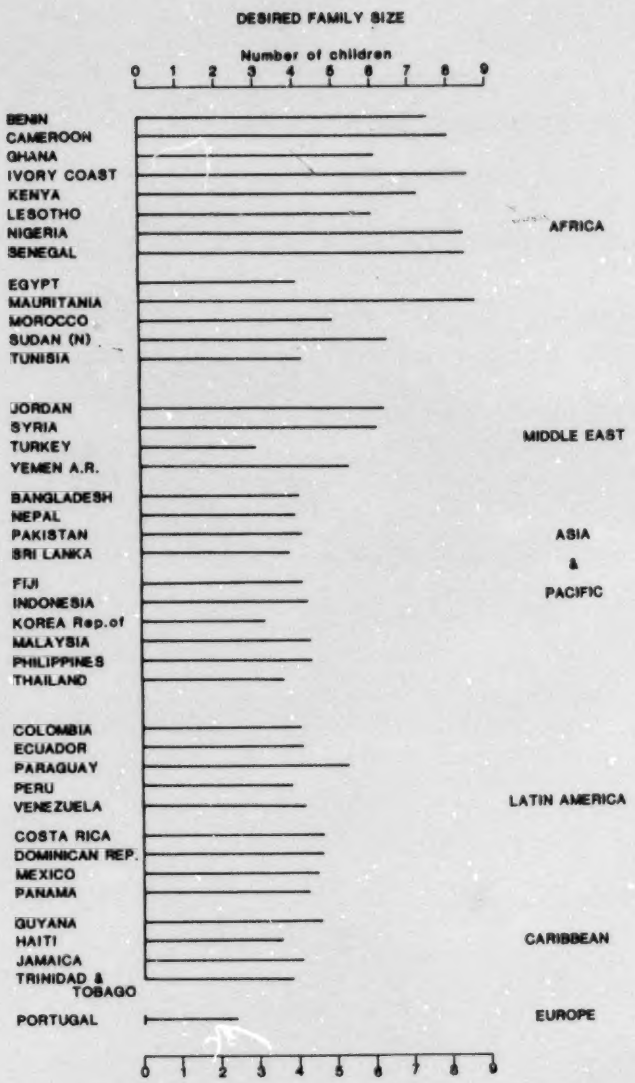
DESIRED FAMILY SIZE
Number of children
0 1 2 3 4 5 6 7 8 9
BENIN
CAMEROON
GHANA
IVORY COAST
KENYA
LESOTHO
NIGERIA
SENEGAL
AFRICA
EGYPT
MAURITANIA
MOROCCO
SUDAN (N)
TUNISIA
JORDAN
SYRIA
TURKEY
YEMEN A.R.
MIDDLE EAST
BANGLADESH
NEPAL
PAKISTAN
SRI LANKA
ASIA
&
PACIFIC
FIJI
INDONESIA
KOREA Rep.of
MALAYSIA
PHILIPPINES
THAILAND
COLOMBIA
ECUADOR
PARAGUAY
PERU
VENEZUELA
LATIN AMERICA
COSTA RICA
DOMINICAN REP.
MEXICO
PANAMA
GUYANA
HAITI
JAMAICA
TRINIDAD & TOBAGO
CARIBBEAN
PORTUGAL
EUROPE
0 1 2 3 4 5 6 7 8 9

Figure 4

for a very large number of countries, the evidence on husbands is much more limited. From the few available surveys with information on husbands' preferences it is clear that, especially among women who would like to terminate childbearing after two or three children, there are many with husbands who would prefer them to have more. On the other hand, the reverse is also sometimes true, that the husband does not want additional children while the wife does. But such observations are based on the very fragmentary information available, which also suggests that wives often do not communicate their current preference to stop or continue childbearing to their husbands, and that similarly, husbands often do not communicate their own preferences to their wives.

It has been argued that the desire to restrict fertility is minimal or absent in traditional societies, and that a combination of socio-economic change and diminished mortality are necessary before a drop in fertility occurs. This view implies that poor and uneducated and rural women – who are numerically so important in many countries – are unmotivated to restrict their fertility and that resources spent on contraceptive distribution and information campaigns to such populations are wasted, since the desire to limit childbearing will come only after substantial economic development has taken place. Various analyses of socio-economic differentials in fertility preferences, however, have suggested that fertility preferences are usually only marginally higher among less educated and rural women and that most of the differentials in actual fertility by social group are due not to differences in preference, but to differing degrees of success in controlling fertility.

Unmet need for family planning

When a woman does not wish to be pregnant and is either at substantial risk of pregnancy but using no contraception or is using an inefficient method with a high rate of failure or has an unwanted pregnancy, it seems reasonable to regard her as having an 'unmet need' for modern contraception. Under this definition, the unmet need for modern contraceptives observed at the WFS survey time varied widely among currently married women aged 15–49.

In the African countries, the unmet need for contraception for stopping childbearing and spacing births varied between 5 per cent in Benin and 21 per cent in Egypt, and stood at 8 per cent in Nigeria and Sudan, at 16 per cent in Ghana, and at 13 per cent in Mauritania. In the Asian countries, the unmet need ranged from 9 per cent in Yemen A.R. to 53 per cent in Fiji, and stood in the region of 30 per cent for Bangladesh, Republic of Korea, Malaysia and Thailand. In the Americas, the unmet need ranged between 22 per cent in Costa Rica and 58 per cent in rural Mexico, and stood at about 30 per cent in Ecuador, urban Mexico and Paraguay, and at about 40 per cent in Colombia.

Various other definitions of unmet need have been proposed, some of which take no account of desire to space births. However, the estimates given here provide reasonable, though necessarily approximate, estimates of the increase in contraceptive use that would occur if women were to implement their stated preferences for stopping and postponing childbearing.

Unwillingness to use contraception

Respondents who had never used a contraceptive method were asked whether they thought they might use a method in the future. In some countries quite large numbers of women said they would not consider using a method in the future. Among ever-married women, the percentage 'unwilling to use' varies between 12 per cent in Trinidad and Tobago and 91 per cent in Mauritania. It is low in the Americas (below 20 per cent), ranges greatly in the Asian countries (between 8 per cent in the Republic of Korea and 70 per cent in Nepal), and, similarly, ranges considerably in Africa. Although the proportion classified as unwilling to use is high in Mauritania, in Ghana it is comparatively low at 34 per cent, which is close to the percentages observed in Egypt, Morocco and Tunisia. If it is assumed that women are unwilling to change their minds on this particular issue, and would permanently refuse to consider contraceptive use, then there are a number of countries where the prospects for fertility decline are considerably reduced. The available data suggest this is not the case, however, and support the theory that unwillingness is a transient phenomenon. A follow-up study of some 4000 respondents in Sri Lanka has revealed that among women who had never used contraception, there was little difference in the likelihood of adoption over a four-year period between the willing group and the unwilling group.

It seems logical to suppose that when women are more fully informed about contraception, unwillingness to use tends to disappear, and that use then begins to snowball, once relatives and neighbours begin to use. It also seems logical to conclude that when the proportion unwilling to use is high, considerable effort will be needed to overcome this barrier if the country in question wishes to lower its fertility.

Desired family size and prospects for fertility decline

One approach frequently used to assess the prospects for fertility decline is to compare the total fertility rate with contemporaneous measures of desired family size. Under this reasoning, there is a prospect for fertility decline, the argument goes, only if desired family size is less than the total fertility rate. A full assessment of prospects for decline would also have to take into account a number of other factors, such as the political will of the government, receptivity to innovation, and whether there are deeply seated religious or moral objections to fertility control.

Measuring desired family size is a controversial area in demography. The appendix table shows actual total fertility rates together with two very different measures of desired family size. One of these measures, 'conventional desired family size', is based on simply asking women the number of children they would have 'if they could choose exactly'. This particular measure has been widely criticized. An alternative measure, which overcomes many of the objections, is the 'wanted total fertility rate', based on excluding unwanted births in the calculation of the total fertility rate. The interpretation of the wanted TFR is that it reflects the number of wanted births the average woman would produce over a lifetime, if each woman's preference, as well as the fertility rates observed at survey time, were to persist into the future. Since preferences are more likely to decline than to rise, the wanted TFR is likely to overestimate the number of births wanted in the long run. The wanted TFR as calculated here only partly accounts

for desires to postpone births, and there are some countries in which desired fertility levels would be substantially lower if this factor could be fully accounted for.

As can be seen from the appendix table, the wanted TFR indicates substantially fewer births wanted than does the 'conventional' measure of desired family size, and implies far greater prospects for decline in many countries. In most Latin American countries, quite moderate levels of fertility would prevail if unwanted births were avoided, averaging between two and three births over a lifetime. The picture in the very diverse Asian group of countries is more mixed. In some countries, such as Sri Lanka, Thailand and Republic of Korea, wanted TFRs are very moderate at 2.6 births or below, while at the other end of the spectrum the wanted TFR is as high as 7.4 in Yemen Arab Republic. Reproductive preferences favour moderate sized families in several countries that have definitely not modernized, where there is high infant mortality and where only a small proportion of the population is urban or educated. High fertility in such societies is possibly explained by the absence of well-developed or legitimized methods of fertility control rather than the desire for large families. From the experience in India and Pakistan it is clear, however, that moderate fertility desires do not by themselves guarantee rapid acceptance of birth control, and that in some countries it may take decades to secure relatively modest gains. On the other hand, the Indian experience has not been typical. In most countries with large proportions of women who do not want additional children, widespread access to contraception has led to a rapid rise in contraceptive use, as in Thailand and Indonesia, and virtually all Latin American countries.

Among the African countries, there is a marked difference between those south and north of the Sahara. Wanted TFRs in north Africa range from 3 to 7 births wanted, and are especially low in Egypt. In countries south of the Sahara, however, the lowest wanted TFR is 5.3 in Lesotho, and the highest is 7.0 in Ivory Coast, and there are probably several countries where both actual and wanted fertility may rise in the future owing to declines in breastfeeding and wider treatment of diseases known to impair fecundity. There are nevertheless quite large proportions of women in some African countries who either wish to postpone births or who are undecided whether they want additional children. Taken together with greater education, a rapidly increasing urban population, and the disruption of the traditional way of life, especially the flow of wealth from children to parents, there is the possibility that African preferences will fall rapidly in the near future.

Overall, the WFS data on reproductive motivation suggest a good prospect for substantial fertility decline in a number of countries, if women avoid unwanted births, though frequently to levels that still imply rapid population growth. It should be emphasized that the estimates currently available do not fully account for desires to postpone childbearing. Initial experimentation with other techniques has suggested that when desires to postpone are fully accounted for, some developing countries may have much lower desired fertility levels than those estimated here.

CHILDSPACING

Childspacing and contraception

By asking contraceptive users whether or not they want more children in the future, contracepting couples can be divided into those who are using for the purpose of stopping

childbearing altogether and those whose aim is childspacing. While the majority of contraceptive use in developing countries is for stopping rather than spacing, it is important to recognize that those whose aim is childspacing form a very substantial minority. Data from 27 WFS countries show an average (giving each country equal weight) of 35 per cent of current contraceptors using for spacing. The figure was over 50 per cent in four countries – Kenya, Lesotho, Paraguay and Sudan. Nearly 80 per cent of contraceptors in the Americas and 30 per cent in the Middle East were using contraception for childspacing. Among the Asian countries, childspacing was an important motive for contraceptive use in Fiji, Indonesia, Philippines, Sri Lanka and Thailand, though less significant in Republic of Korea, Nepal and Pakistan.

These findings indicate that family planning programmes in developing countries should focus on potential users of contraception for childspacing as well as women who already have several children and who wish to cease childbearing. Women who use contraception for spacing are more likely to use it successfully when they eventually want to cease childbearing. Childspacing also has an important demographic impact by reducing the fertility of married women in the younger age groups in which fertility is highest, and by increasing the average interval between births and hence extending the time between generations. Since the average reproductive span is about 30 years, family planning programmes need to take into account users' needs throughout their reproductive years.

Childspacing effects on infant and child mortality

The harmful effects of rapid childbearing on the survival of children have been studied for at least the past 60 years. The analysis of WFS data has now contributed to a better understanding of this relationship and has provided policy-relevant findings. In general, children born less than two years after the preceding birth are much less likely to live until their fifth birthday than those born within two to three years. Equally, children born after long intervals (four or more years) have a better chance of living up to their fifth birthday. In some countries babies born after short intervals are two-and-a-half times more likely to die within the first five years of life than those born after four-year intervals (see figure 5). The harmful nature of closely spaced births affects both the younger and older children.

The harmful effects of short birth intervals on childhood mortality are sometimes explained by the 'maternal depletion syndrome', whereby one pregnancy coming too soon after the previous confinement leaves the mother little time to recover her health, especially if the child is breastfed for a long time or is still unweaned at the time of the next conception. Moreover, a continuous cycle of pregnancy and lactation leads to a progressively higher risk of low birth-weight babies with decreased chances of survival in the early years. The other explanation for poor survival chances is 'competition'. A large number of children requiring feeding and attention at the same time may result in a situation where the older children take precedence in access to the limited resources available in the family, or all the children may be at higher risk as a result of sharing the meagre resources among larger numbers. An important aspect of the phenomenon is the competition of a rapid subsequent pregnancy. The effect of such a pregnancy is often to

BIRTH SPACING AND CHILD MORTALITY

(number of children dying before age five per 1,000 live births in the five-year period, according to length of previous birth interval, in selected countries)

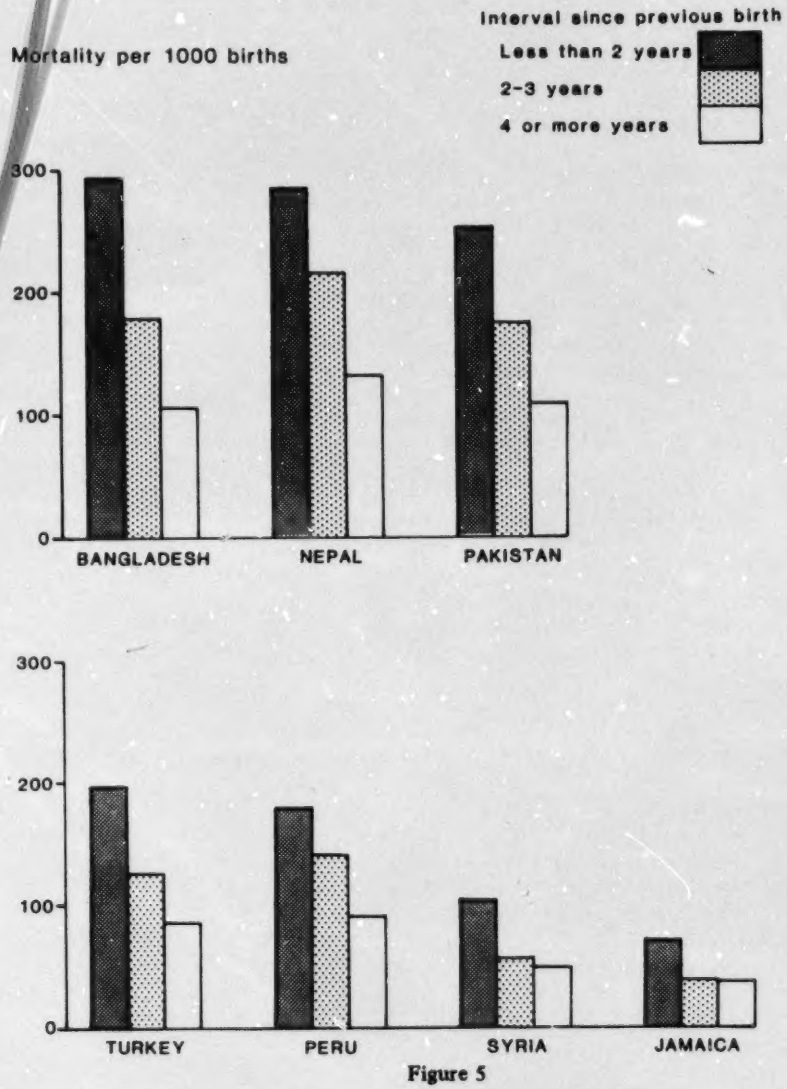

Figure 5

induce too rapid weaning, with consequent harmful effects on the survival of the preceding child.

The analysis based on WFS data shows that both maternal depletion and competition play a role when children are born in rapid succession. From a study of 26 countries it emerges that the occurrence of a birth less than two years after the previous birth increased the mortality rate in the first month of life by at least 50 per cent in 24 countries, and more than doubled it in 14 of them. The effects of rapid childbearing were equally apparent in the 2nd to 12th month of life, where the mortality risk was raised by at least 50 per cent in 22 countries and actually doubled in 12. A closely spaced subsequent birth also tended to adversely affect the survival chances of the older child. These effects of childspacing on mortality were largely independent of the mother's educational level, thereby demonstrating the possibility of reducing mortality by increased childspacing for all educational groups.

The effects of childspacing on infant and child mortality are not independent of the effects of maternal age and birth order since births to young mothers who have numerous children are of necessity closely spaced. A question often asked is which is the primary causative agent – childspacing or the inter-relation of birth order and maternal age. Detailed cross-national analysis in 30 countries has left little doubt that the childspacing effects are real and that they cannot result purely from maternal age or birth order patterns.

A successful family planning programme could, therefore, directly contribute to a decline in infant and child mortality by reducing the fertility of younger and older women, by reducing the number of women with very many births, and by lengthening the interval between successive births. It is estimated that there is a reduction in the probability of dying during the first year of life of about 10 per cent and of dying between the ages of one and four of about 16 per cent if all births are spaced at least two years apart.

BREASTFEEDING

In the absence of significant use of contraception, breastfeeding is an important determinant of fertility. Its effect in inhibiting ovulation increases the birth interval and results in lower completed fertility. Post-partum sexual abstinence may further lengthen the period between births in some cultures. The effect of breastfeeding on fertility depends on how long, frequently, intensely and exclusively infants are breastfed. Ovulation returns sooner if supplemental feeding is introduced, and for this reason the 'contraceptive' effect of lactation rarely lasts as long as a year even where breastfeeding averages two or more years. In addition to the protection it offers against early pregnancy, its role in infant and child mortality and nutrition is of critical importance in the poorer developing countries.

The WFS surveys provide the first large body of comparable data on the prevalence and duration of breastfeeding across a broad spectrum of the developing world (41 countries in Asia, Africa and the Americas), at both national and subnational levels. In addition, a number of countries (mostly in Africa) which adopted the module on factors

other than contraception affecting fertility (FOTCAF) obtained more detailed breastfeeding data in addition to information on other factors thought to influence fertility, most of which were not previously available. The survey data indicate that the vast majority of infants in developing countries are breastfed, for a few months at least, and that absence of breastfeeding, in many cases, is due to the early death of the child. Except for Fiji, Malaysia and Philippines, 92–98 per cent of women in Africa and Asia breastfeed their children. Breastfeeding is virtually universal among women in sub-Saharan Africa. In Latin America between 10 and 20 per cent of women do not breastfeed and, in the Caribbean, this figure is roughly 10 per cent. These values contrast sharply with estimates found in more developed countries. In the United States, for example, only 29 per cent of children born in 1971–74 were reported to have been breastfed.

Appreciable contrasts in duration of breastfeeding are evident among the surveyed countries, varying from more than two years in some Asian societies to less than a year in most of the Americas (see figure 6). Mean duration of breastfeeding in Africa is between 14 and 20 months, with the higher durations mostly in sub-Saharan Africa, compared with less than a year in the Americas, apart from Ecuador, Haiti and Peru (12–15 months). In Asia the durations vary more. The longest are found in Bangladesh where women breastfeed on average for 29 months, in Nepal, about 25 months, Indonesia, 24 months and Sri Lanka, 21 months. The lowest average duration is in Malaysia where the mean is only 6 months. For the other Asian countries the duration averages 11–19 months, roughly the same as in Africa.

WFS data indicate that prevalence and duration of breastfeeding do vary within different demographic and socio-economic groups, and imply that breastfeeding is declining in developing countries. Older women had breastfed for 2–5 months longer than younger women in most countries, and for as many as 6 months more in Indonesia, Nepal, Thailand and Tunisia. On average, the differentials are less than 2 months in most of sub-Saharan Africa. Rural women in most countries breastfeed for 2–6 months longer than their urban counterparts on average, and only in Mauritania and Portugal is the urban–rural difference less than 1 month. More substantial differences occur in Indonesia (9 months), Jamaica (7 months) and Thailand (11 months).

The length of breastfeeding decreases steadily with increases in education, except in Fiji and Mauritania. Among women with 1–3 years' education, there is a decrease in breastfeeding of about 1–2 months as compared with women with no education. Among the most educated women, ie those with 7 or more years of schooling, the decrease is very substantial, especially in Egypt, Indonesia, Republic of Korea, Mexico, Panama and Philippines. It is mainly in sub-Saharan Africa that relatively well educated women breastfeed for more than one year.

If current increases in urbanization, female education and female labour force participation continue, it is likely that the practice of breastfeeding will decline further.

Although breastfeeding may not be used deliberately to space pregnancies, it clearly has a substantial effect on the spacing between births and on total fertility. One study found that each month of breastfeeding added 0.7 months to the length of the birth interval in Sri Lanka, 0.5 months in Colombia, Indonesia and Panama, 0.4 months in Bangladesh and Peru, and 0.3 months in Guyana and Jordan.

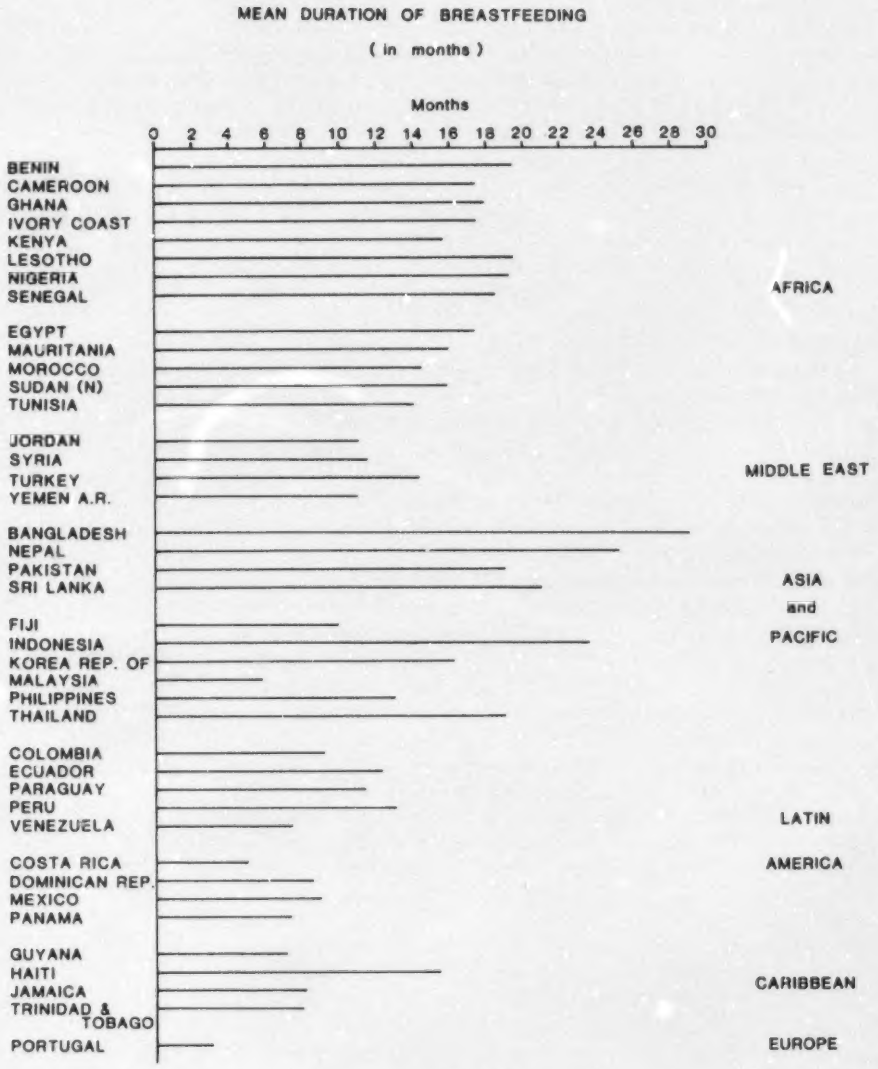
MEAN DURATION OF BREASTFEEDING
(in months)
Months
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
BENIN
CAMEROON
GHANA
IVORY COAST
KENYA
LESOTHO
NIGERIA
SENEGAL
AFRICA
EGYPT
MAURITANIA
MOROCCO
SUDAN (N)
TUNISIA
JORDAN
SYRIA
TURKEY
YEMEN A.R.
MIDDLE EAST
BANGLADESH
NEPAL
PAKISTAN
SRI LANKA
ASIA
and
PACIFIC
FIJI
INDONESIA
KOREA REP. OF
MALAYSIA
PHILIPPINES
THAILAND
COLOMBIA
ECUADOR
PARAGUAY
PERU
VENEZUELA
LATIN
AMERICA
COSTA RICA
DOMINICAN REP.
MEXICO
PANAMA
GUYANA
HAITI
JAMAICA
TRINIDAD & TOBAGO
CARIBBEAN
PORTUGAL
EUROPE

Figure 6

Among illiterate rural women in the Americas, Asia and Africa, much of the current restraint of fertility comes from the traditionally long periods of breastfeeding combined, in some cases, with abstinence. In sub-Saharan Africa, where current use of contraception is less than 10 per cent in most countries, these factors lead to an infertile (non-susceptible) period of about 15 months after each birth. Decline in breastfeeding may offset the effect of increasing contraception on marital fertility if the increase is too slow. The socio-economic changes that influence declines in breastfeeding probably also encourage contraceptive use, but the question is whether contraceptive use can replace breastfeeding and other traditional restraints rapidly enough to forestall an increase in fertility.

MATERNAL AND CHILD HEALTH

In a number of countries some questions on maternal and child health were incorporated in the WFS questionnaire. An analysis of the results of such surveys in the Americas showed that huge differentials exist between and within countries with regard to the maternal and child health indicators. For example, the percentage of women who had had medical check-ups during their pregnancy varied from 49 in Peru to 92 in the Dominican Republic. Similarly, the proportion of women being assisted by a professional in the delivery varied from 48 to 81 per cent. Medical check-ups of the newborn child also showed considerable variation over countries, reaching a high of 70 per cent in Paraguay and a low of 33 per cent in the Dominican Republic. Similar differences were found for the vaccination of newborn children and the women's vaccination against tetanus.

More interesting than these differences between countries is the finding that in every single country the maternal and child health indicators show a positive association with level of education of the mother, occupation of the father and urban residence.

The importance of these findings is that observed differences in infant and child mortality may be partly due to the lack of medical infrastructure in certain areas of the countries. Also, the poorer sections of the population seem to have less ready access to the health services than their more well-to-do counterparts. There is currently a trend to integrate family planning programmes with maternal and child health services, but whether this constitutes an effective mechanism for bringing family planning to the sector of the population most in need will depend on the coverage and accessibility of these programmes.

INFANT AND CHILD MORTALITY

One of the principal benefits of the World Fertility Survey programme has been the collection of valuable data on infant and child mortality. The birth history section of the individual questionnaire makes it possible to estimate not only current levels but also recent trends and differentials. For many countries, especially those in Africa, it is the first time that such information has become available. Moreover, the WFS surveys have

produced valuable new insights into the mortality of young children beyond the first year of life where perhaps the greatest improvements can be made.

Recent levels of mortality

Figure 7 depicts the chances of dying during infancy and early childhood that prevailed during the five-year period preceding the WFS surveys, as estimated from the birth history data.

The variation of mortality of young children is very great: Panama and Portugal, the WFS countries with the lowest levels of mortality, had fewer than 50 per 1000 of their children die before reaching their fifth birthday compared with more than 250 (or one quarter) in Senegal, a variation of more than five to one. However, even the mortality levels of Panama and Portugal are substantially above the levels of the more developed world. For example, Japan has less than 10 per 1000 of its children die in infancy (that is, at less than one year of age) and the United States and England and Wales about 15 per 1000, compared with 33 for both Panama and Portugal.

Twelve of the 41 countries had infant mortality rates above 100 deaths per 1000 children born and seven had rates below 50. There is a definite regional pattern to mortality: very high in south Asia and sub-Saharan Africa and lower in the Americas. However, the variations within regions are greater, with differences of up to 100 or more deaths per 1000.

The variation of mortality at ages one to four years is greater still than that of infants. Deaths at age one vary from less than 5 per 1000 children in Costa Rica, Portugal and Trinidad and Tobago to over 50 in Nepal and Senegal, a range of ten to one. On the whole, in the countries with higher mortality close to half of the deaths of children under five occur after their first birthday compared to less than a quarter for the lower mortality countries.

Recent trends in infant and child mortality

In practically all the countries covered by the WFS, deaths to children under the age of five have declined over the last fifteen years. For all countries together, there were 49 fewer deaths per 1000 children born in the most recent period than in the period 15–19 years ago, ie a fall of about 16 deaths every 5 years. The decline in infant deaths was on average 25 per 1000 births and, at older ages, it was 24. By region both Asia and Africa indicate about the same improvement (56 and 59 fewer deaths per 1000 children born, respectively) while the American countries show a smaller improvement of 36 fewer deaths on average.

For most countries the declines have been substantial, although unequal between countries and somewhat irregular over time. For deaths under five years, the greatest improvements occurred in Ivory Coast, Jordan and Turkey. The falls in mortality in these countries have allowed 14–18 per cent more children to reach their fifth birthday in the 5 years preceding the survey than had done so 10–14 years earlier. The smallest changes

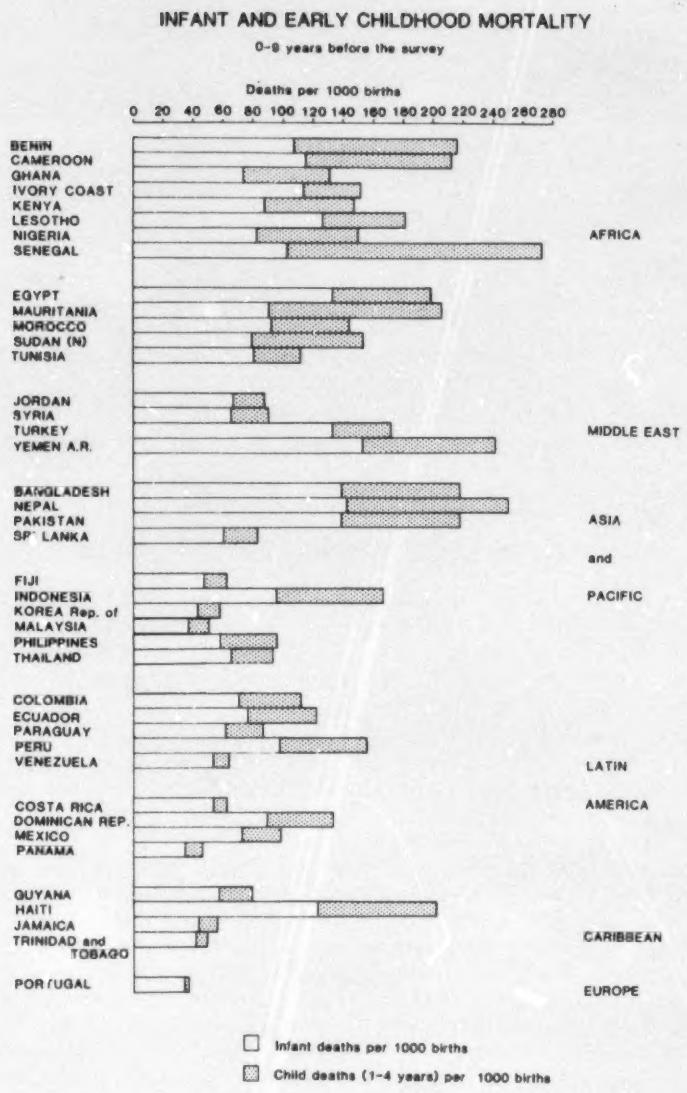

Figure 7

*1975–9

occurred in the Philippines and in Paraguay, the former showing practically no improvement and the latter a small and erratic change over time.

Regarding only the first year of life, in 26 of the countries with a WFS survey infant mortality fell by at least 20 deaths per 1000 births between the periods 15–19 and 0–4 years before the survey. The countries with the largest improvements in infant mortality are Benin, Cameroon, Ivory Coast, Jordan and Turkey, all of which have 45 fewer deaths per 1000 births. However, mortality during infancy in Philippines, Senegal, Sri Lanka and Venezuela appears not to have improved.

Differentials in infant and child mortality

One of the strengths of the estimation of mortality rates from the WFS surveys is that these rates can be related to the characteristics of the children, their families and their communities.

Age of mother

As is well known from the statistics of the developed countries, children born to very young mothers and mothers over the age of 35 are more likely to die in infancy. Overall, the WFS data support this finding for the developing countries.

Birth order

There are many reasons to believe that the mortality of infants and other small children should be associated with their order of birth. On the one hand, first-born children are more likely to be born to a mother who is biologically and economically unprepared to bear and bring up a child. On the other hand, children of high orders are more likely to be born to older mothers who are physically more worn out; these children may be affected by competition from older brothers and sisters for food and other family resources and may be cared for by someone other than their mother. They are indeed more likely to be considered superfluous. Moreover, since women of higher socio-economic status are likely to have smaller families, a disproportionately large share of children of high birth orders will come from families of lower education and income. For these reasons, higher mortality for both first-born children and fourth and later children might be expected.

Overall, evidence from the WFS shows that first-born children are only six per cent more likely to die during infancy than the second or third. Fourth, fifth and sixth children are also about five per cent more likely to die than the second or third, but children after the sixth are 39 per cent more likely to die in infancy than the second or third.

The relationship between infant mortality and birth order is not uniform: 25 of the 41 countries show higher mortality for first-born infants than for second and third born, and 27 show higher mortality for children of fourth, fifth and sixth birth orders. However, higher infant mortality for seventh or later order children is apparent in 37 countries.

With regard to mortality at ages one to four, there is a sharp rise in mortality with birth order in nearly all countries.

Sex of child

It has been commonly accepted that males have higher mortality than females at all ages, except where maternal mortality is important. The WFS data show that male infants have smaller chances of survival in nearly all countries. Jordan and Syria, however, have substantial excess female infant mortality. For all countries combined, male infant mortality is some 16 per cent higher than female.

Surprisingly, however, this is not true for mortality at ages one to four. Less than one-half of the countries have higher mortality for boys than for girls at these ages, and overall, male mortality is about the same as female mortality.

There does appear to be a geographical relationship with sex differences in mortality, with the countries of south Asia and the Middle East showing particularly high levels of female mortality at ages one to four.

Urban–rural residence

In most of the countries infant mortality was lowest in metropolitan areas, higher in other urban areas, and higher still in rural areas. In a few countries, most notably Bangladesh, Egypt, Philippines, Sri Lanka and Thailand, infants in the metropolitan centres have no large advantage in survival over those in other urban areas, but still have a greater advantage than those living in rural areas. In eight countries, Costa Rica, Dominican Republic, Jamaica, Kenya, Republic of Korea, Mauritania, Paraguay and Tunisia, infants born in rural areas have about the same chances of survival as those in non-metropolitan urban areas. However, in two countries, Guyana and Haiti, infants born in the capital are much less likely to survive than even those born in rural areas.

For mortality between the ages of one and four years, the advantage of living in an urban setting is very clear: death rates are lowest in metropolitan areas, intermediate in other urban areas and highest in rural areas.

These disparities in mortality by level of urbanism reflect differentials in many associated characteristics such as standard of living, access to health facilities, knowledge and economic capacity for child care. The WFS data shed light on several important socio-economic factors.

Parents' education

In virtually every country surveyed both infant and child mortality decrease consistently with increasing education. In Cameroon, for example, mothers with no education had twice as many of their infants die as women with secondary education.

Similar to its effect on infant mortality, education has a great impact on the level of mortality at ages one to four. For example at these ages in Cameroon, 109 per 1000 children of uneducated mothers died as against 55 of secondary educated mothers. The results of a study of 28 WFS surveys show that the father's educational level can also be very important not only in regard to infant mortality but also for mortality at ages one to four.

In comparing countries, it may be asked whether the differences between them are due solely to differing levels of development or to other factors as well. In the study of 28 WFS surveys, comparisons were made between countries for two standard groups: the 'urban élite' and the 'rural traditional' group. Among the 'urban élite' husband and wife

live in the metropolitan areas and have secondary education and the husband is in a professional or clerical occupation; in the 'rural traditional' group, the husband works in agriculture and has only an incomplete primary education, and the wife has no education. For the élite group, three-quarters of the countries had similarly low mortality rates. However, it was clear from this study that mortality in traditional rural areas varies widely, even for those with similar socio-economic characteristics. Thus part of the difference between countries may be due to the effects of differing child care practices and traditions, levels of disease prevalence, medical and health care provision, and poverty, particularly within their rural areas.

Housing and community characteristics

In addition to the characteristics of the child's parents, the physical characteristics of the house can affect its chances of survival, and a number of studies using WFS data have signalled their importance. In the Philippines, for example, the availability of sanitation and electricity proved to be related to child mortality even after allowing for the effects of birth order, maternal age and education. In Panama, water supply and sewage disposal were almost as important as the mother's characteristics. Toilet facilities show clear relationships with mortality at ages one to four in studies in Mexico and Sri Lanka.

Community characteristics and health facilities and their relationships with infant and child mortality were studied in Bangladesh, Cameroon, Ecuador, Egypt, Ivory Coast, Jordan, Peru and Philippines. The study showed that the presence of health facilities in villages is associated with lowered mortality in most of the countries.

3 Policy implications

The primary objective of the WFS was to meet the need for reliable and up-to-date information on human fertility. This need came not only from population scientists but also from government planners and policy-makers who required information on fertility as a major component of population growth and on factors affecting fertility behaviour, in order to orient official policies and programmes in population, health, social and economic fields which have an impact on fertility. Although fertility has always been the primary focus of the WFS surveys, unique, high quality information has also been obtained on related topics, such as infant and early childhood mortality, nuptiality and breastfeeding patterns. In this way the programme has contributed to policy-making not only in the fields of fertility and family planning but also with regard to maternal and child health and health planning in general.

FERTILITY DECLINE AND DEVELOPMENT

The early 1970s saw a lively debate between those who argued that general development, improved levels of living, education, health, transportation and communication facilities, as well as industrialization, urbanization and increased employment of women, would bring about fertility decline in the developing world with little or no promotion of organized family planning and those who maintained that development itself was threatened by rapid population growth and that family planning programmes could make an appreciable independent impact on fertility. The debate culminated at the 1974 World Population Conference when the slogan 'development is the best contraceptive' was coined by some. More recently, there has been a growing consensus that organized family planning can never replace general development programmes but is a useful adjunct, not only for demographic reasons but as an extension of individual freedom of choice. At issue is still the question of which aspects of development, independent of family planning efforts, will most effectively promote decline in fertility.

Many have posited that exposure to formal education and rising literacy play an important part in promoting fertility decline. At first glance, the results from WFS support this contention. Better educated women marry later than women with little or no education. Furthermore, couples who are better educated are more likely to know about and use contraception and will, therefore, usually have smaller families than their

less educated counterparts. These differences are particularly pronounced in Latin America and the Middle East but are also common in other regions.

A closer look at the data, however, suggests that rising education may often not be a solution to the problem of excessive fertility. In many WFS countries, a few years' schooling seems to be conducive to a slight rise in fertility, compared to the level of uneducated couples. This is true, for instance, of Indonesia, Kenya, Pakistan, Philippines and Sudan. The reason is not that such couples desire more children or are less ready to use contraception but that their high fertility seems to be due partly to shortened lactation. A detailed analysis suggests that other factors not captured in survey results may also be at work, such as better nutrition and health, leading to a lower level of spontaneous foetal loss or, in some parts of Africa, a lower level of polygamy and shortening of the period of post-natal sexual abstinence.

On the other hand, there is evidence that illiteracy or very low levels of literacy are not necessarily obstacles to the acceptance and use of family planning. In Indonesia and Thailand, for example, fertility has declined sharply as a result of widespread diffusion of family planning services precisely among couples who have little or no education. Clearly, illiteracy cannot be regarded as an unconquerable impediment to radical changes in reproductive behaviour.

Education is important in its own right and most developing countries have made universal primary education an important target. But its impact on fertility cannot be taken for granted. WFS data show clearly that it is only parents with secondary or higher schooling who show substantially reduced fertility.

It has also been argued that improvements in the status of women are associated with, and may be a precondition for, fertility decline. It is plausible to believe that women, who have the main burden of reproduction, may see greater advantages to controlling fertility than their husbands and that strong patrilineal societies where women are denied equal status are more resistant to reproductive change than egalitarian societies.

On the whole WFS has not identified for policy purposes any single aspect of development that is crucial to the level of fertility decline and demographic change. Fertility decline can and does occur in widely differing socio-economic contexts. Its onset appears to be determined more by ill-understood cultural factors than by any objectively ascertainable development factors.

FAMILY PLANNING

In most of the surveyed developing countries, large majorities of women claim to know at least one method. Typically, modern methods such as the pill or intra-uterine device are most familiar. Knowledge of sources of specific methods is often well below general awareness of methods and varies greatly between the diverse societies; but it is worth noting that even in countries such as Colombia, Indonesia, Mexico and Venezuela where contraceptive awareness is very high, substantial minorities are apparently ignorant of any places where they can obtain advice and supplies. Non-medical and non-appliance methods (withdrawal and rhythm) are, of course, in principle available to all but these methods do

not appear to be common in most developing countries. The so-called contraceptive revolution over the last decade has derived its impetus almost entirely from increased use of modern methods, with few reliable recorded instances of the increased popularity of traditional methods.

As expected, ignorance of supply sources is concentrated among the rural and least educated population. The disparities are sometimes startling. In Mexico, for instance, only 27 per cent of rural women compared to about 70 per cent of urban residents knew of a source; and only a quarter of uneducated women, as against nearly 90 per cent of those with secondary or higher schooling, were aware of any place to visit for advice or supplies. Similar sharp differences are apparent for other Latin American countries and in Nepal. Thus differences between sectors of the population in the adoption of contraception reflect to some extent differential knowledge and it seems clear that there is considerable scope for further family planning information and publicity. But such variations are not inevitable. The findings for countries like the Republic of Korea, Malaysia, Indonesia and Costa Rica show that knowledge of family planning outlets is widely and equally diffused among all sectors of the population.

To the extent that couples have distinct preferences for particular methods, knowledge of where to obtain particular methods is a better criterion of access than knowledge of sources in general. WFS evidence shows that indeed wide variation exists in knowledge about sources for particular methods within countries. Thus, for many couples the effective choice of contraception is extremely limited. The policy implication is that all methods of family planning should be made available to the population at large in so far as their use is legal and in accordance with prevailing social values. To ensure the individual's free choice and strengthen the acceptability and practice of family planning, all available methods should not merely be provided for in service programmes but also be dealt with in information and educational activities.

A problem facing many family planning programmes is the side effects of some contraceptive methods which often result in high discontinuation rates. In the Philippines, side effects were the reason given by one-third of all women for discontinuation, and it was estimated that if a contraceptive method free from side effects and fully effective had been available, discontinuation rates would be cut by over one-half and the birth rate substantially reduced. Therefore, it is essential to provide for follow-up service and advice as a part of family planning and health services.

The degree of dispersion and density of contraceptive sources needed to promote and sustain high levels of contraceptive practice is a key issue for family planning programmes. Though various measures of proximity have been obtained in surveys, the data have proved analytically complex. The effect of distance on propensity to use no doubt operates partly through awareness of the source and partly on the cost and inconvenience of travel. It also depends on the nature of the method. For sterilization, the effort involved may be considerable but it occurs only once. This feature may, to some extent, explain the growing popularity of sterilization in less developed countries.

Is travelling time to a source of other methods a critical factor in the decision to adopt and continue using? Once confounding variables such as urban–rural residence, education and desire to limit fertility are controlled among those aware of a source, the

overall relationship between proximity to source and actual use is only weakly positive. If, however, method-specific sources are considered, proximity to such sources does become an important determinant of contraceptive use, especially for methods needing regular supply, such as the pill; however, for methods like sterilization or the IUD no strong relationship was found.

The policy implications of these finds are twofold. First, there is in many countries a need to increase knowledge of facilities through publicity. Secondly, increasing the number of outlets might have a significant positive effect on the use of regular supply methods, such as the pill and the condom.

Family planning issues in sub-Saharan Africa are very different from those in other regions. WFS survey results generally portray cultures which are strongly pronatalist in attitude. Desired family sizes range from six to eight children, and large proportions of women indicated no numerical boundary to their reproductive wishes. Only small minorities of women seem to want to avoid further childbearing and levels of contraceptive practice are negligible. In contrast, surveys in other regions have persistently shown more modest desired family sizes. The reasons for the disparity remain to some extent obscure but it has important policy implications.

In sub-Saharan Africa, family planning programmes cannot be framed on the assumption of a massive latent demand for smaller sizes of family. There appear to be two main feasible policies – to attempt to change people's views about the desirability of large families or to stress the benefits of birthspacing through contraception. The former course of action presents a formidable challenge. There are few instances where government action alone has been effective in changing family size ideals. The second course of action is perhaps more likely to succeed. There are already in most African societies strong beliefs in the benefits of birthspacing, and a rapid succession of births is considered undesirable or even shameful. As traditional means of birthspacing, that is prolonged lactation and post-natal abstinence, are weakening, a process which may be difficult to arrest, a strong demand for contraception as a substitute may emerge. Once the habit of contraception is established, the prospects for decline in the perceived desirability of large families may be enhanced. This scenario underlines the importance, particularly in Africa, of integrating family planning with maternal and child health services.

However, there are considerable practical difficulties in delivering a family planning service designed primarily for spacing needs. Owing to prolonged breastfeeding and, in west Africa, to extended abstinence following childbearing, many women are not at risk of conceiving for several months following childbirth. In these circumstances, contraceptive adoption immediately after birth may seem superfluous. Yet, it is more difficult to identify and canvass women later on than at the time of delivery, when contact with health services is at its greatest.

MARRIAGE POSTPONEMENT

It has been widely assumed that if the age at marriage increases, fertility will almost automatically decrease. However, WFS findings suggest that the issue is more complex.

In most countries fertility was lower for women who married above the age of 20 than below, and the effect on fertility was even stronger among those who married above the age of 25. In several Asian and African countries, women who married below the age of 17 and those who married at ages 17–20 had similar levels of completed fertility. In some Asian countries a very young age at marriage is associated with *lower* fertility than marriage at ages 17–20, due to the greater risk of complications and miscarriages from early pregnancies, sometimes resulting in fecundity impairment.

These findings suggest that policies aimed at delaying marriage, however desirable on social grounds, may have little effect on fertility until postponement into the twenties becomes prevalent. A number of developing countries have tried to raise the age at marriage by legislation, but often with little success. The administrative structure in many countries is too weak to enforce such legislation and, until reasonably reliable birth registration to provide proof of age has been developed, implementation and enforcement will remain difficult. Raising age at marriage by law to reduce fertility is unlikely to be effective unless the social, economic and cultural climate is also changing and other factors to reduce the level of fertility are in operation.

Among socio-economic measures contributing to postponement of marriage (and subsequent decline in fertility) are education, vocational training and employment for women, as well as changes in the relationship between parents and their children. If these factors do raise the age at marriage, they may at the same time reinforce other social changes which reduce fertility, such as the transformation of the extended family pattern into a nuclear one, and the acceptance of full responsibility by parents for bringing up their own children. A study of WFS data in 22 developing countries found consistent positive effects of education upon age at marriage in almost all countries. It seems, however, that improvements in primary education do not have much effect upon girls' age at marriage; only when education reaches the secondary level is there much and usually only if improved employment opportunities outside the home are made available at the same time.

PROMOTION OF BREASTFEEDING

WFS surveys have made considerable contributions to knowledge of breastfeeding patterns and trends, with important policy ramifications. The findings strongly suggest that educational advancement, employment for women, urbanization and development in general are accompanied by a decline in breastfeeding. This is reinforced by survey information on recent trends in lactation from such countries as, for example, Republic of Korea, Philippines and Thailand. A substantial reduction of breastfeeding duration unaccompanied by increased contraceptive use would tend to raise fertility. One major comparative study using information on breastfeeding and birth spacing suggests that a three-month reduction in length of breastfeeding may reduce the birth interval by between one and two months.

The role of breastfeeding in limiting fertility by prolonging the birth interval is often reinforced by other traditional practices which inhibit fertility. Principal among these is

sexual abstinence after a birth, usually to ensure the survival and health of children born, rather than to limit family size. In several sub-Saharan countries in Africa such a period of abstinence is longer on average than the period of infertility following childbirth, despite prolonged breastfeeding. Once again, WFS surveys provide clear evidence that abstinence is typically less prolonged among the more modern sectors of many countries, for example, Ivory Coast, where women with no education abstain on average for twice as long (14 months) as those with seven or more years of education. Erosion of these traditional restraints will also tend to shorten birth intervals and raise fertility.

The obvious policy response to the current declining trend in breastfeeding and subsequent rise in fertility in many developing countries is to strengthen maternal and child health care facilities and family planning programmes. This should both arrest the trend and adjust to it by developing consistent and mutually reinforcing policies on breastfeeding and family planning.

The importance of breastfeeding in maintaining the health of mothers and children should be emphasized through health and other educational programmes, including development of training of health personnel. The fact that infants are more vulnerable to infection, retarded growth and other health risks during their first six months suggests that special educational efforts be directed at women who already have comparatively short durations of breastfeeding with the aim first of arresting further decline in breastfeeding and later possibly reversing the trend. The fertility-inhibiting effects of breastfeeding are more pronounced for women who exclusively breastfeed (ie do not introduce supplementary foods) in the first four to six months. WFS findings that infant and child mortality is clearly related to the level of parents' education would indicate that promotion of breastfeeding and other maternal and child health care measures should give full attention to the needs of all women with little or no education, irrespective of whether they currently have short or long breastfeeding durations.

It is obvious that the beneficial effects of breastfeeding on the health of the infant should be stressed in any educational activities; the impact upon birth spacing and, consequently, on the health of the woman, the child and the family should also be made clear. WFS data have shown that women in developing countries appear not to be using breastfeeding as a means of spacing births; women with large families did not breastfeed more or longer than women with fewer births. This suggests that there is scope here for improved educational and promotional programmes.

A WFS-type survey in north-eastern Brazil indicates a strong relationship between the use of health services and the prevalence of breastfeeding. Women who had pre- and postnatal care, who gave birth at a hospital or clinic and whose child was under medical care were much less likely than other women to breastfeed and had much shorter breastfeeding durations, irrespective of their socio-economic backgrounds. Nearly one-third of the women stated that a doctor or nurse had advised giving non-maternal milk and the majority believed that their own milk was weak or insufficient. In these circumstances, educational efforts should first of all aim at impressing upon the medical staff the importance of breastfeeding and the shortcomings of powdered or condensed milk with their associated risks of infection, while taking into account that survey data indicate that the majority of breastfed infants were receiving supplementary food, even during the first few

months. Educational activities may successfully be directed towards the women using health services, particularly those who have shown concern about their child's and their own health and, therefore, are likely to be responsive to advice. Women who are not using health services may be approached through other channels, such as mothers' clubs, community centres, teachers and the mass media.

Another approach to stopping the erosion of traditional fertility restraints is that of family planning which must focus efforts on the period following delivery. Use of contraception for spacing purposes needs to be emphasized more as an objective of family planning programmes. In parts of sub-Saharan Africa, because of the high family size preferences of many African societies, the only way that contraception will be accepted is by showing that it may be used for spacing. It is particularly in this region that weakening of traditional restraints may create a potential market for contraception as a substitute, although re-education may also be needed.

The WFS has proved an important vehicle for studying the extent to which rises in contraceptive use compensate for erosion of traditional restraints. Two studies on this theme reach somewhat similar conclusions that the fertility-increasing effect of shorter durations of infertility following childbirth among the more modern strata of society seems almost always more than counterbalanced by the impact of postponement of marriage and the use of contraception. This suggests that the time-lag between decline in breastfeeding and compensating changes in contraception and nuptiality may not be long lasting, although not without significance in many African and Asian societies with high total fertility rates.

Family planning programmes should be closely co-ordinated, and consistent, with maternal and child health activities. The patterns of breastfeeding and associated infertility may vary considerably from one society to another and have to be taken into account in programme designs. In choosing the most suitable method of contraception and the time for introducing it, the possible effect upon breastfeeding in particular has to be fully considered. Non-hormonal contraceptives are preferable during breastfeeding as they do not interfere with milk production. At least one WFS survey supported the belief that use of the pill, but not other methods, has a negative effect upon breastfeeding. The World Health Organization recommends that use of combined hormonal contraceptives be discouraged and only progesterone methods – oral or injectable – be made available to lactating mothers.

HEALTH SERVICES

A number of WFS surveys obtained information about health service provision at the community level, in addition to the individual and household data. This has provided the opportunity to examine whether easy access to health services substantially reduces infant and child mortality and how far these links inter-relate with socio-economic factors. Once again, the impression is that provision of health services does not have a strong impact on infant and child mortality, although a few interesting exceptions have emerged. This lack of general positive findings so far is perhaps all the more surprising

since health service provision in an area is often associated with provision of other facilities. The most consistent positive finding to date has been the reduction in mortality in the first month of life if a trained midwife is available, although in the Philippines this was only true for better educated mothers, demonstrating the important interplay between education and effective use of services. In rural Bangladesh infant and child mortality were lower when a primary school or family planning clinic was nearby, but distance to health services (hospital, primary health centre, dispensary or qualified doctor) was not strongly associated with levels of mortality. Once again, the results are not definitive and more elaborate studies are required to determine what the deficiencies in the health services are.

The United Nations had declared the 1980s the decade for drinking water and sanitation. The few studies based on WFS data, although not definitive, have so far failed to uncover any substantial differences in mortality of children under age five by type of household water supply. More positive findings have emerged with regard to toilet facilities. Availability of sanitation within a household is strongly associated with improvements in infant and, particularly, child survival, even allowing for a number of socio-economic factors.

USE OF WFS DATA BY POLICY-MAKERS

In 1983 the WFS carried out a mail survey in 25 countries which had published the WFS country report, in order to assess, among other things, the use made of the WFS data by policy-makers up to that time.

The review revealed that very widespread use of the data had been made in a large number of countries. Specifically, 18 of the 19 countries with government family planning programmes had made some kind of use of WFS data in these programmes. Most of these 18 countries had used the WFS data to assess programme achievements (16 countries), to increase programme efficiency (14) and to define or redefine programme objectives (14). Some examples illustrate the type of use made in these programmes.

The Kenya survey generated in the government both concern and a re-examination of its position regarding population growth. It showed that the country had a population growth rate of about four per cent a year, one of the highest in the world. At that rate, its population would double every 18 years. Kenyan women indicated a desire for eight or more children, a level which would result in a rapidly expanding population. It led to a reformulation of the family planning programme, with far greater emphasis on changing family size desires and on expanding the programme into an active endeavour providing a range of contraceptive options.

In the Republic of Korea, the data led to a downward revision of demographic targets and to a campaign emphasizing longer birthspacing among young women. The national survey revealed a strong preference for sons, one of the strongest son preferences in the world. This led to recommendations for fostering equal opportunities in the society for males and females, and to a thorough study of current civil law including that pertaining to the traditional inheritance system, presumably to correct male bias.

In Sri Lanka, the evidence of low levels of contraceptive use led to a review of sources of contraceptive supplies as well as service outlets. The fertility survey data were used to obtain funds to expand the sterilization programme.

In Trinidad and Tobago, where the data indicated a high pregnancy rate among young women, programme emphasis was changed to focus on this group.

In Dominican Republic, the data showed almost universal knowledge of family planning as well as unexpectedly widespread acceptance of female sterilization. As a result, the programme shifted its emphasis, adding sterilization to the services already offered in government clinics and focusing educational efforts on specific methods of contraception rather than on contraception itself. (A national resurvey five years later found that the proportion of currently married women who had been sterilized had risen from 12 to 20 per cent, and that fertility had declined substantially.)

Use of WFS data in privately supported family planning programmes was reported in 15 of the 23 countries where such programmes existed. The data were mainly used to increase programme efficiency (11 countries) and to define or redefine programme objectives (10 countries). The following are some of the specific actions taken.

In Lesotho, the programme was revised to increase the involvement of men. The data on the low level of contraceptive use in Sri Lanka was brought to the attention of economic planners and political leaders to obtain more support for the programme. In Panama, counselling for teenagers received greater emphasis than in other countries, and programmes shifted from an urban to rural emphasis. In Paraguay the data were used to select areas of greater potential contraceptive demand.

Aside from being used extensively for family planning programmes, the WFS data were used in public health programmes in 19 of the 25 countries. They led to adjustments in, and greater appreciation of, the importance of public health activities. In Republic of Korea, Pakistan, Sudan, Syria, Thailand and Turkey, among others, the findings on infant and child mortality, often much higher than the incomplete vital registration had shown, stimulated interest in maternal and child health programmes and, in some countries, were used to generate increased funding of them. In Thailand, attention focused on water supply and environmental sanitation because of the relationship between these factors and infant mortality.

Finally, most of the countries surveyed have already used the WFS data in their official population projections (19) while an additional 5 countries used them in less important projections, or plan to use them when new official national projections are prepared.

It will be seen from these examples that governments were stimulated to action by a wide variety of data – on fertility levels and trends, infant and child mortality, son preference, birthspacing and teenage pregnancy, to name but a few. In most cases action followed soon after publication of the national survey findings. These surveys are continuing to be analysed, sometimes for national purposes, sometimes to make cross-national comparisons. By early 1984, more than 500 country studies were either in progress or had been completed. The size and usefulness of the data base can therefore only increase in the future.

4 Conclusions

The WFS programme was a unique experience in international co-operation. The successful completion of comparable surveys in 41 developing and 20 developed countries was in itself a remarkable achievement. Before WFS it was common to see surveys of this kind terminated without publishing results – victims of bureaucratic inertia, difficult field conditions, erratic coders and computers, political sensitivities and numerous other problems.

The planning and execution of such a large and complex research programme, with the participation of institutions and individual specialists from all parts of the world, have demonstrated that multi-country surveys on a comparable basis are feasible and useful. Moreover, the WFS gave more than usual emphasis to the achievement of high quality in data collection and analysis, preparing, for example, extensive training manuals, utilizing well-trained interviewers and supervisors working in teams, translating questionnaires into local languages, analysing sources of response errors and providing expert assistance with detailed data processing and analysis.

An important objective of the WFS was to assist in building up survey capability in developing countries. One indication of the programme's achievement towards this aim is the fact that more than half of WFS's publications and studies have been contributed by scholars and experts from the developing world. Further evidence of WFS's ability to deal with complex statistical and demographic problems is the widespread use of its technical manuals and reports in graduate courses in statistics and population studies.

WFS surveys have provided a massive addition to knowledge of human fertility throughout the world and extensive new data have been obtained in two important related fields: infant and child mortality, and breastfeeding. Some of the main findings from the developing country surveys are highlighted below:

- Fertility is highest in the Middle East and sub-Saharan Africa, with an average of 7 children per woman. In North Africa the figure falls to 6, and in Asia and the Americas to 4.5, although the latter average includes a few large countries with much higher rates (Bangladesh, Mexico, Pakistan).

- Substantial fertility declines have been observed over recent years in all regions except sub-Saharan Africa.

- WFS has not identified any single aspect of development that is crucial for bringing about fertility decline.

- Approximately half of the women surveyed in 31 countries (excluding sub-Saharan Africa) do not want any more children. An analysis in 18 countries has shown that the prevention of all births reported as unwanted would reduce the population growth rate from 2.2 to 1.3 per cent, increasing the time it takes populations to double from 32 years to 53 years. In sub-Saharan Africa, only 10–15 per cent of women do not want any more children.

- The average number of children desired by women ranges from 3–4 in some Asian countries to 7–8 in parts of Africa.

- About one-quarter of currently married women interviewed were using contraception. The proportions vary widely between countries, being highest in the Americas (average 39 per cent), somewhat lower in Asia, considerably lower in the Middle East and North Africa, and very low (2–8 per cent) in sub-Saharan Africa.

- Contraceptive use increases with education. An extreme case is Bangladesh, where women with seven or more years of schooling are nearly five times more likely to be contraceptors than those with no schooling.

- The presence of convenient family planning services generally leads to greater contraceptive use, especially in rural areas. In several countries, however, motivation is a stronger determinant than availability of services.

- Age at marriage is rising in most countries, particularly in Asia but also in the Middle East and North Africa. The Americas and sub-Saharan Africa show little or no increase.

- Postponement of marriage beyond about 20 years of age leads ultimately to a reduction in fertility. Below this age, postponement has a reducing effect only in some countries; in others, couples appear to make up for later marriage by faster childbearing.

- WFS has clearly shown that a short birth interval between two children leads to a considerably higher risk of both of them dying in infancy or early childhood. If all births coming less than two years after a previous birth were postponed for two years, the child's risk of dying before the age of five would be almost halved.

- The average duration of breastfeeding varies widely between countries, from 18–24 months or more in some Asian and African societies to 6–12 months in most of the Americas. There is a sharp fall in the average duration for women with more than seven years' schooling.

The particular value of the WFS is that these trends and relationships are now carefully documented so that comparisons between a large number of countries in all parts of the world can be made. WFS has already provided a great deal of data of relevance for planners, policy-makers and administrators in the fields of health care, education, family planning and related areas. Its findings have taken some of the guesswork out of policy-making and programme implementation and evaluation.

Surveys of this kind will continue to be an indispensable source of the information required by governments and international organizations. Since recruitment of new participants in the WFS programme was discontinued in 1982, several countries – such as the People's Republic of China, Malawi and Rwanda – have initiated WFS-type surveys with the support of the International Statistical Research Centre and other countries are considering similar steps. As a concluding activity of the WFS programme, a careful assessment of all major aspects of the survey work has been undertaken as an important contribution to improving future surveys of this kind. The International Conference on Population held in Mexico City in August 1984 adopted by concensus the following recommendation: 'Governments, in collaboration with appropriate international organizations, are urged to establish or strengthen national sample survey programmes . . . [and] it is recommended, in particular, that surveys should be carried out periodically on fertility, family planning, health of mothers and children, mortality and migration and that technical assistance should be made available from international sources'.

The population problems in developing countries are, and will no doubt remain for a long time to come, among the most vital development issues, not only in the countries concerned but also for the world as a whole. Major shifts of emphasis are occurring in the provision of health care and family planning facilities in the developing world. The primary health care focus of the Strategy for Health for All by the year 2000 adopted by the United Nations is still evolving and postdates most WFS surveys. The United Nations Children's Fund (UNICEF) is currently promoting a global programme on child growth, oral rehydration therapy, breastfeeding and inoculation. These and similar activities depend for their success on a continuing source of information to guide and monitor their progress.

Ten years ago, at the World Population Conference held in Bucharest, governments committed themselves to 'the basic right of all couples and individuals to decide freely and responsibly the number and spacing of their children and to have the information, education and means to do so'. Today, in many societies, this right still remains to be honoured. The findings of WFS and similar surveys in the future, whether in new countries or in those already covered by WFS, should provide valuable guidance towards the achievement of this goal for the benefit of mankind.

Appendix table Summary measures of demographic characteristics from 41 WFS surveys

Country	Nuptiality			Fertility		
	Mean age at first marriage	% ever married aged 15–19	Time spent in marriage	Crude birth rate	Total fertility rate	Children ever born to women 45–49
	(1)	(2)	(3)	(4)	(5)	(6)
Benin	18.2	43.8	96.6	49*	7.1	6.3
Cameroon	17.5	53.1	92.0	44*	6.4	5.2
Ghana	19.3	30.9	93.6	48*	6.5	6.7
Ivory Coast	17.8	56.0	93.6	47*	7.4	6.9
Kenya	19.9	27.4	94.5	48	8.3	7.9
Lesotho	19.6	31.5	91.5	44	5.8	5.3
Nigeria	18.5	40.3	95.7	50*	6.3	5.8
Senegal	17.7	59.3	94.5	51	7.2	7.2
Egypt	21.3	22.5	94.3	43*	5.3	6.8
Mauritania	19.2	37.1	87.4	50*	6.3	6.0
Morocco	21.3	22.1	92.5	44*	5.9	7.1
Sudan (North)	21.3	21.8	94.3	39	6.0	6.2
Tunisia	23.9	5.2	97.1	35*	5.9	7.0
Jordan	21.6	19.0	97.4	45	7.5	8.6
Syria	22.1	22.7	97.7	45	7.5	7.7
Turkey	20.4	22.4	98.2	31*	4.5	6.3
Yemen A.R.	16.9	61.7	93.8	48*	8.5	7.2
Bangladesh	16.3	70.7	87.9	43	6.1	7.1
Nepal	17.1	59.0	96.1	47	6.2	5.8
Pakistan	19.8	38.2	98.0	40	6.3	6.9
Sri Lanka	25.1	6.8	95.0	28	3.8	5.9
Fiji	21.8	12.2	96.0	31	4.2	6.5
Indonesia	19.4	37.4	90.7	32	4.7	5.3
Korea, Rep. of	23.2	2.6	–	29	4.3	5.8
Malaysia	23.1	11.3	91.2	32	4.7	6.2
Philippines	24.5	6.8	94.4	34	5.2	6.6
Thailand	22.5	16.3	–	31	4.6	6.5
Colombia	22.1	15.1	91.0	34	4.7	6.8
Ecuador	22.1	18.5	92.4	41*	5.3	6.8
Paraguay	22.1	16.9	91.5	35	5.0	6.3
Peru	23.2	14.0	93.0	36	5.6	6.6
Venezuela	21.8	20.1	91.0	34	4.5	6.1
Costa Rica	22.7	14.6	93.2	27	3.3	6.7
Dominican Rep.	20.5	27.9	83.6	40	5.7	6.5
Mexico	21.7	19.2	93.4	40	6.2	6.8
Panama	21.2	19.7	89.0	28	3.8	5.8
Guyana	20.0	27.8	91.4	31	5.0	6.4
Haiti	21.8	16.2	87.8	37	5.5	5.9
Jamaica	19.2	27.4	83.8	28	5.0	5.5
Trinidad & Tobago	20.9	20.5	92.1	24	3.3	5.8
Portugal	23.1	6.3	97.1	16*	2.4	2.9

NOTES: Of the large countries, Brazil, India and the People's Republic of China did not participate, the first two on the grounds that they had conducted similar surveys in parts of their countries. China eventually applied to join, but as the deadline for recruitment of countries to the WFS programme had been passed, ISI made other arrangements to support implementation of WFS type surveys.

Three countries have restricted age coverage to less than 15–49 years: Costa Rica and Panama 20–49; Venezuela 15–44.

Explanations of the indices are as follows: **Column 1** Singulate mean age at marriage, at the time of the survey; **Column 2** Per cent ever married among women aged 15–19 at the time of the survey; **Column 3** Per cent of time since first marriage spent in married state; **Column 4** Crude birth rate from

Child mortality		Breastfeeding		Fertility preferences			Country
Under age one	Under age five	Full breast-feeding (months)	Breast-feeding (months)	% want no more children	Mean desired family size	Wanted total fertility rate	
(7)	(8)	(9)	(10)	(11)	(12)	(13)	
108	204	2.6	19.3	7.7	7.5	6.9	Benin
105	191	5.1	17.6	3.3	8.0	6.1	Cameroon
73	127	4.5	17.9	11.8	6.1	5.6	Ghana
113	162	5.0	17.5	4.3	8.5	7.0	Ivory Coast
87	142	2.2	15.7	16.6	7.2	6.9	Kenya
126	174	2.5	19.5	14.8	6.0	5.3	Lesotho
90	165	3.8	19.2	5.0	8.4	5.4	Nigeria
112	262	4.9	18.5	8.0	8.4	6.7	Senegal
132	191	7.4	17.4	53.7	4.1	3.1	Egypt
90	196	7.9	15.8	10.9	8.7	6.8	Mauritania
91	142	5.5	14.5	41.8	5.0	3.7	Morocco
79	151	5.6	15.9	16.9	6.4	4.8	Sudan (North)
80	107	6.2	14.1	48.9	4.2	3.6	Tunisia
66	80	–	11.1	41.8	6.3	5.1	Jordan
65	86	5.5	11.6	36.5	6.1	5.6	Syria
133	166	–	14.3	59.3	3.0	2.4	Turkey
162	237	4.5	11.0	19.3	5.4	7.4	Yemen A.R.
135	222	–	28.9	62.8	4.1	3.1	Bangladesh
142	235	–	25.2	30.3	4.0	4.5	Nepal
139	207	–	19.0	43.0	4.2	3.9	Pakistan
60	86	–	21.0	61.4	3.8	2.2	Sri Lanka
47	59	–	9.9	49.5	4.2	3.6	Fiji
95	159	–	23.6	38.9	4.3	3.6	Indonesia
42	56	–	16.3	71.6	3.2	2.5	Korea, Rep. of
36	50	–	5.8	44.9	4.4	3.1	Malaysia
58	93	3.3	13.0	54.3	4.4	3.6	Philippines
65	91	–	18.9	61.0	3.7	2.6	Thailand
70	108	–	9.2	61.5	4.1	2.6	Colombia
76	118	–	12.3	55.9	4.2	3.1	Ecuador
61	85	2.9	11.4	32.3	5.3	4.2	Paraguay
97	149	–	13.1	61.4	3.8	2.6	Peru
53	64	–	7.4	55.0	4.2	2.9	Venezuela
53	61	–	5.0	52.0	4.7	2.6	Costa Rica
89	129	–	8.6	51.9	4.7	3.0	Dominican Rep.
72	96	–	9.0	57.1	4.5	3.6	Mexico
33	46	–	7.4	63.0	4.3	2.7	Panama
58	77	–	7.2	55.0	4.6	2.8	Guyana
123	191	–	15.4	45.9	3.6	3.8	Haiti
43	56	–	8.1	50.5	4.1	2.3	Jamaica
41	49	–	8.0	46.5	3.8	2.4	Trinidad & Tobago
33	37	–	3.1	68.5	2.4	1.4	Portugal

WFS: annual births per 1000 population (figures with an asterisk from the Population Reference Bureau Data Sheet 1983); **Column 5** Total fertility rate: number of children a woman would bear if she experiences throughout her lifetime the rates which prevailed during the five-year period prior to the survey; **Column 6** Average number of children ever born by women aged 45–49 at the time of the survey; **Column 7** The number of children who died before the age of one year, per 1000 births, for the five-year period before the survey; **Column 8** The number of children who died before the age of five years, per 1000 births, for the five-year period before the survey; **Column 9** Mean duration of full breastfeeding (ie before introduction of supplementary food); **Column 10** Mean duration of total breastfeeding based on last live birth and penultimate live birth; **Column 11** Per cent of currently

Appendix table *(continued)*

Country	Family planning					
	% aware of any contraceptive method	% ever used any method	% currently using a method		% willing to use contraception	Unmet need for contraception
			Efficient methods only	Any method		
	(14)	(15)	(16)	(17)	(18)	(19)
Benin	40	36	1	20	1.1	2.8
Cameroon	34	11	1	3	–	0.4
Ghana	69	40	6	10	30.4	5.7
Ivory Coast	85	71	0	2	5.1	2.6
Kenya	93	32	4	6	21.7	8.2
Lesotho	65	23	2	5	34.7	6.9
Nigeria	33	14	1	5	2.9	1.9
Senegal	60	11	1	4	1.4	–
Egypt	90	40	23	24	43.1	17.9
Mauritania	8	2	0	1	1.5	6.2
Morocco	84	29	16	19	23.7	10.8
Sudan (North)	51	12	4	5	8.7	7.6
Tunisia	95	45	25	32	27.0	12.5
Jordan	97	46	17	25	36.6	10.6
Syria	78	33	15	20	20.4	10.5
Turkey	88	55	13	38	39.0	12.8
Yemen A.R.	25	3	1	1	4.9	10.7
Bangladesh	82	14	5	8	18.9	–
Nepal	23	4	2	2	10.5	18.0
Pakistan	75	10	4	5	66.1	22.1
Sri Lanka	91	44	19	32	42.9	14.9
Fiji	100	68	35	41	35.8	–
Indonesia	77	34	23	26	26.7	9.3
Korea, Rep. of	94	57	27	35	80.2	21.2
Malaysia	92	47	23	32	39.5	12.2
Philippines	94	58	16	36	40.0	13.3
Thailand	96	46	30	33	53.3	16.4
Colombia	96	59	30	42	30.3	17.5
Ecuador	90	51	26	34	31.6	17.2
Paraguay	96	55	24	37	26.7	9.4
Peru	82	49	11	31	36.9	21.4
Venezuela	98	66	38	50	40.0	12.1
Costa Rica	100	82	54	65	23.6	5.1
Dominican Rep.	98	48	26	32	35.2	13.3
Mexico	90	45	23	30	34.9	18.7
Panama	99	73	46	54	43.0	10.2
Guyana	95	54	28	31	29.6	17.0
Haiti	85	36	5	19	50.5	17.0
Jamaica	98	65	36	38	28.2	13.3
Trinidad & Tobago	99	78	46	52	26.0	7.6
Portugal	98	78	33	66	–	5.9

married, fecund women who want no more children; **Column 12** Mean number of desired children among currently married women; **Column 13** The number of wanted births the average woman would bear over her lifetime, if the preferences reported at the survey were to remain unchanged; **Column 14** Per cent of ever-married women aware of any contraceptive method; **Column 15** Per cent of ever-married women who have ever used any contraceptive method; **Column 16** Per cent of currently married women who were currently using efficient methods of contraception; **Column 17** Per cent of currently married women who were currently using any method of contraception; **Column 18** Per cent of ever-married women willing to use contraception among those who are at risk and have never used contraception before; **Column 19** Per cent of currently married, fecund, non-pregnant women who want no more children, and who report that they are not using any method of contraception.

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